Order No. MAC0111063C3

Service Manual

Room Air Conditioner

CS-C9BKNG CU-C9BKN5G / CS-C12BKNG CU-C12BKN5G

National
National

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

National

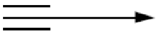
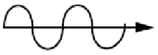
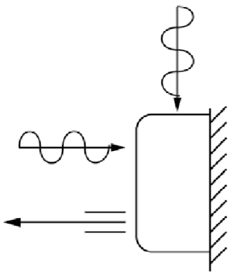
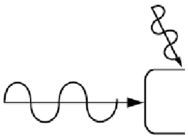
1. Features

- High Efficiency
- Compact Design
- Comfort Environment
- 8 hours of sleep mode operation
- Air filter with function to reduce dust and smoke

- **Wider range of horizontal discharge air**
- **Auto Restart**
- **Random auto restart after power failure for safety restart operation**
- **Removable and Washable Front Panel**
- **Remote Control Self-illuminating Button**
- **Catechin Air Purifying Filter**
- **Trap dust, tobacco smoke and tiny particles**
- **Prevent the growth of bacteria and viruses trapped**
- **Solar Refreshing Deodorizing Filter**
- **Remove unpleasant odour from the air**
- **Quality Improvement**
- **Gas leakage protection**
- **Prevent compressor reverse cycle**
- **2-stage OLP to protect compressor**
- **Noise prevention during soft dry operation.**
- **Anti-dew Formation Control (Cooling & Soft Dry)**
- **Blue Coated Condenser**
- **High resistance to corrosion.**
- **Operation Improvement**
- **Economy mode to reduce electrical power consumption**
- **Powerful mode to reach the desired room temperature quickly**
- **Long Installation Piping**
- **CS/CU-C9BK long piping up to 10 meter**
- **CS/CU-C12BK, long piping up to 15 meter**
- **12-hour Timer Setting**

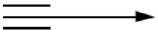
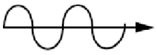
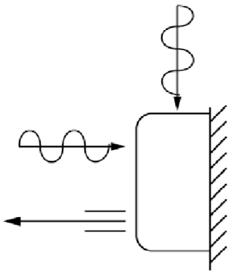
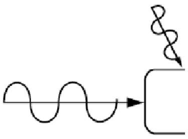
2. Functions

3. Product Specifications

		Unit	CS-C9BKNG	CU-C9BK
Cooling Capacity		**kW (BTU/h)**	**2.65 - 2.70 (9,040 - 9,200)**	
Moisture Removal		**l/h (Pint/h)**	**1.6 (3.4)**	
Power Source		**Phase**	**Single**	
		V	**220 - 240**	
		Cycle	**50**	
Airflow Method		**OUTLET**  **INTAKE** 	**SIDE VIEW** 	**TOP VI** 
Air Volume	**Indoor Air (Lo)**	**m3/min (cfm)**	**6.8 (240) - 6.8 (240)**	**—**
	Indoor Air (Me)	**m3/min (cfm)**	**8.0 (280) - 8.0 (280)**	**—**
	Indoor Air (Hi)	**m3/min (cfm)**	**9.9 (350) - 9.9 (350)**	**—**
	Indoor Air (SHi)	**m3/min (cfm)**	**10.9 (380) - 10.9 (380)**	**—**
Noise Level		**dB (A)**	**High 36 - 36, Low 26 - 26**	**High 46**
		Power level dB	**High 49 - 49**	**High 61**
Electrical Data	**Input Power**	**W**	**740 - 780**	
	Running Current	**A**	**3.5 - 3.3**	
	EER	**W/W (BTU/hW)**	**3.58 - 3.46 (12.2 - 11.8)**	
	Starting Current	**A**	**16.4**	
Piping Connection Port **(Flare piping)**		**inch** **inch**	**G ; Half Union 3/8”** **L ; Half Union 1/4”**	**G ; 3-way va** **L ; 2-way va**
Pipe Size **(Flare piping)**		**inch** **inch**	**G ; (gas side) 3/8”** **L ; (liquid side) 1/4”**	**G ; (gas si** **L ; (liquid si**

Drain Hose	**Inner diameter**		**mm**	**12**	**—**
	Length		**mm**	**650**	**—**
Dimensions	**Height**		**inch (mm)**	**10 - 13/16 (275)**	**21 - 1/4 (**
	Width		**inch (mm)**	**31 - 15/32 (799)**	**30 - 23/32**
	Depth		**inch (mm)**	**8 - 9/32 (210)**	**11 - 3/8 (**
Net Weight			**lb (kg)**	**20 (9.0)**	**71 (31.**
Compressor		**Type**		**—**	**Rotary (1 cy rolling pist**
	Motor	**Type**		**—**	**Induction (2**
	Rated	**Output**	**W**	**—**	**700**
Air Circulation		**Type**		**Cross-flow Fan**	**Propelle**
		Material		**AS + Glass Fiber 20%**	**PP Res**
	Motor	**Type**		**Induction (4-poles)**	**Induction (6**
		Input	**W**	**44.8 - 53.5**	**52.0 - 5**
	Rate	**Output**	**W**	**15**	**30**
	Fan Speed	**Low**	**rpm**	**780 - 780**	**—**
		Medium	**rpm**	**920 - 920**	**—**
		High	**rpm**	**1,140 - 1,140**	**820 - 8**
		SuperHigh	**rpm**	**1,250 - 1,250**	**—**
Heat Exchanger	**Description**			**Evaporator**	**Conden**
	Tube material			**Copper**	**Copp**
	Fin material			**Aluminium (Pre Coat)**	**Aluminium (B**
	Fin Type			**Slit Fin**	**Louver**
	Row / Stage			**(Plate fin configuration, forced dr**	
				2 × 15	**1 × 2**
	FPI			**19**	**17**
	Size (W × H × L)		**mm**	**610 × 315 × 25.4**	**841 × 508**
Refrigerant Control Device				**—**	**Capillary**
Refrigeration Oil			**(cm^3)**	**—**	**SUNISO 4G ATMOS M6**
Refrigerant (R-22)			**g (oz)**	**—**	**815 (28**
Thermostat				**Electronic Control**	**—**
Protection Device				**—**	**2 Stage Ov Protec**
Capillary Tube	**Length**		**mm**	**—**	**720**
	Flow Rate		**l/min**	**—**	**11.0**
	Inner Diameter		**mm**	**—**	**1.5**
Air Filter	**Material Style**			**P.P. Honeycomb**	**—**
Capacity Control				**Capillary Tube**	
Compressor Capacitor			**μF, VAC**	**—**	**30 μF, 37**
Fan Motor Capacitor			**μF, VAC**	**1.5 μF, 400VAC**	**2.0 μF, 4**

- Specifications are subject to change without notice for further improvement.

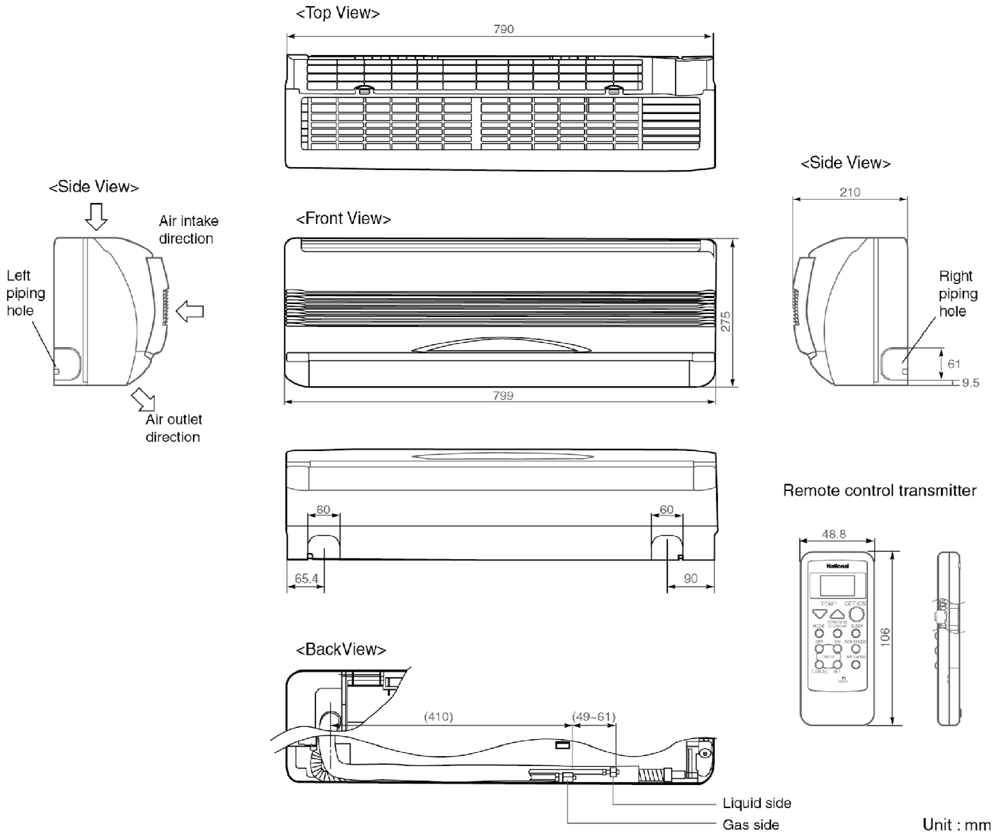
		Unit	CS-C12BKNG	CU-C12BI
Cooling Capacity		kW (BTU/h)	3.60 - 3.65 (12,300 - 12,400)	
Moisture Removal		l/h (Pint/h)	2.1 (4.4)	
Power Source		Phase	Single	
		V	220 - 240	
		Cycle	50	
Airflow Method		OUTLET  INTAKE 	SIDE VIEW 	TOP VI 
Air Volume	Indoor Air (Lo)	m^3/min (cfm)	7.3 (260) - 7.3 (260)	—
	Indoor Air (Me)	m^3/min (cfm)	8.7 (310) - 8.7 (310)	—
	Indoor Air (Hi)	m^3/min (cfm)	10.2 (360) - 10.2 (360)	—
	Indoor Air (SHi)	m^3/min (cfm)	10.5 (370) - 10.5 (370)	—
Noise Level		dB (A)	High 39 - 39, Low 29 - 29	High 48
		Power level dB	High 52 - 52	High 62
Electrical Data	Input Power	kW	1.11 - 1.15	
	Running Current	A	5.1 - 4.9	
	EER	W/W (BTU/hW)	3.24 - 3.17 (11.1 - 10.8)	
	Starting Current	A	20.6	
Piping Connection Port (Flare piping)		inch inch	G ; Half Union 1/2” L ; Half Union 1/4”	G ; 3-way va L ; 2-way va
Pipe Size (Flare piping)		inch inch	G ; (gas side) 1/2” L ; (liquid side) 1/4”	G ; (gas sic L ; (liquid si

Drain Hose	Inner diameter		mm	12	—
	Length		mm	650	—
Dimensions	Height		inch (mm)	10 - 13/16 (275)	21 - 1/4 (
	Width		inch (mm)	31 - 15/32 (799)	30 - 23/32
	Depth		inch (mm)	8 - 9/32 (210)	11 - 3/8 (
Net Weight			lb (kg)	20 (9.0)	77 (35.
Compressor		Type		—	Rotary (1 cy rolling pist
	Motor	Type		—	Induction (2
	Rated	Output	kW	—	1.09
Air Circulation		Type		Cross-flow Fan	Propeller
		Material		AS + Glass Fiber 20%	PP Res
	Motor	Type		Induction (4-poles)	Induction (6
		Input	W	44.8 - 53.5	63.7 - 7
	Rate	Output	W	15	35
	Fan Speed	Low	rpm	900 - 900	—
		Medium	rpm	1,080 - 1,080	—
		High	rpm	1,260 - 1,260	830 - 8
		SuperHigh	rpm	1,300 - 1,300	—
Heat Exchanger	Description			Evaporator	Conden
	Tube material			Copper	Coppe
	Fin material			Aluminium (Pre Coat)	Aluminium (B
	Fin Type			Slit Fin	Louver
	Row / Stage			(Plate fin configuration, forced dra	
				2 × 15	2 × 2
	FPI			21	17
	Size (W × H × L)		mm	610 × 315 × 25.4	723.5 × 744.2
Refrigerant Control Device				—	Capillary
Refrigeration Oil			(cm3)	—	SUNISO 4G
Refrigerant (R-22)			g (oz)	—	820 (28
Thermostat				Electronic Control	—
Protection Device				—	2 Stage Ov Protec
Capillary Tube	Length		mm	—	605
	Flow Rate		l/min	—	15.7
	Inner Diameter		mm	—	1.7
Air Filter	Material Style			P.P. Honeycomb	—
Capacity Control				Capillary Tube	
Compressor Capacitor			µ F, VAC	—	30 µ F, 37
Fan Motor Capacitor			µ F, VAC	1.5 µ F, 400VAC	2.0 µ F, 4

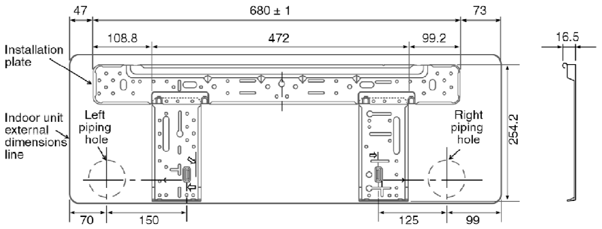
- Specifications are subject to change without notice for further improvement.

4. Dimensions

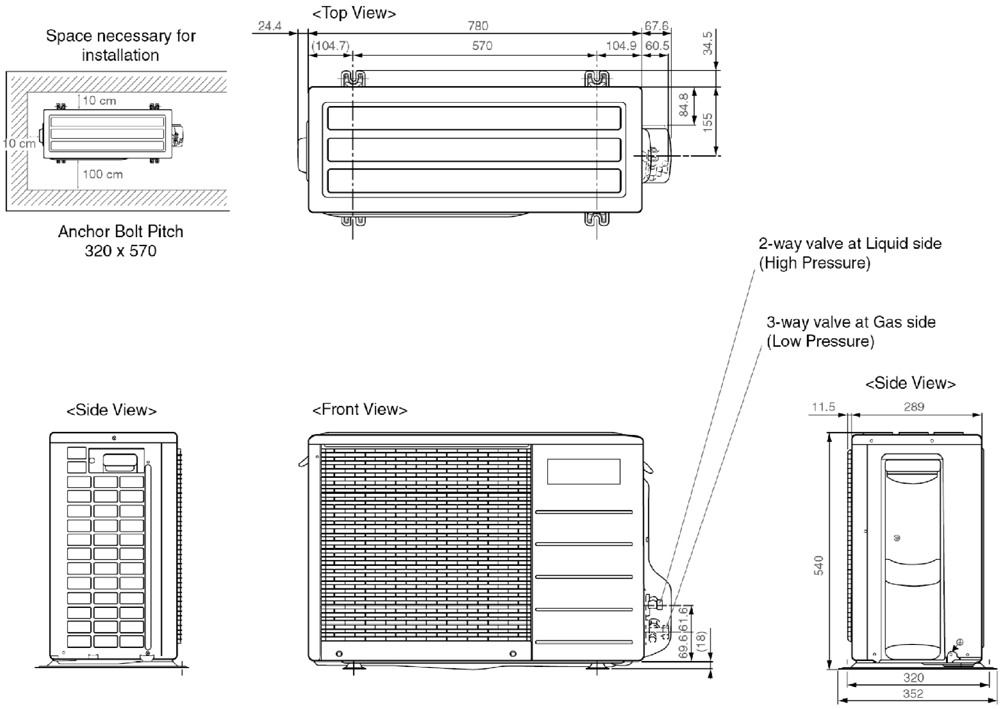
CS-C9BKNG / CS-C12BKNG


<Top View>
790
<Side View>
Air intake direction
Left piping hole
Air outlet direction
<Front View>
275
799
<Side View>
210
Right piping hole
61
9.5
60
60
65.4
90
Remote control transmitter
48.8
106
<BackView>
(410)
(49~61)
Liquid side
Gas side
Unit : mm

Relative position between the indoor unit and the installation plate <Front View>

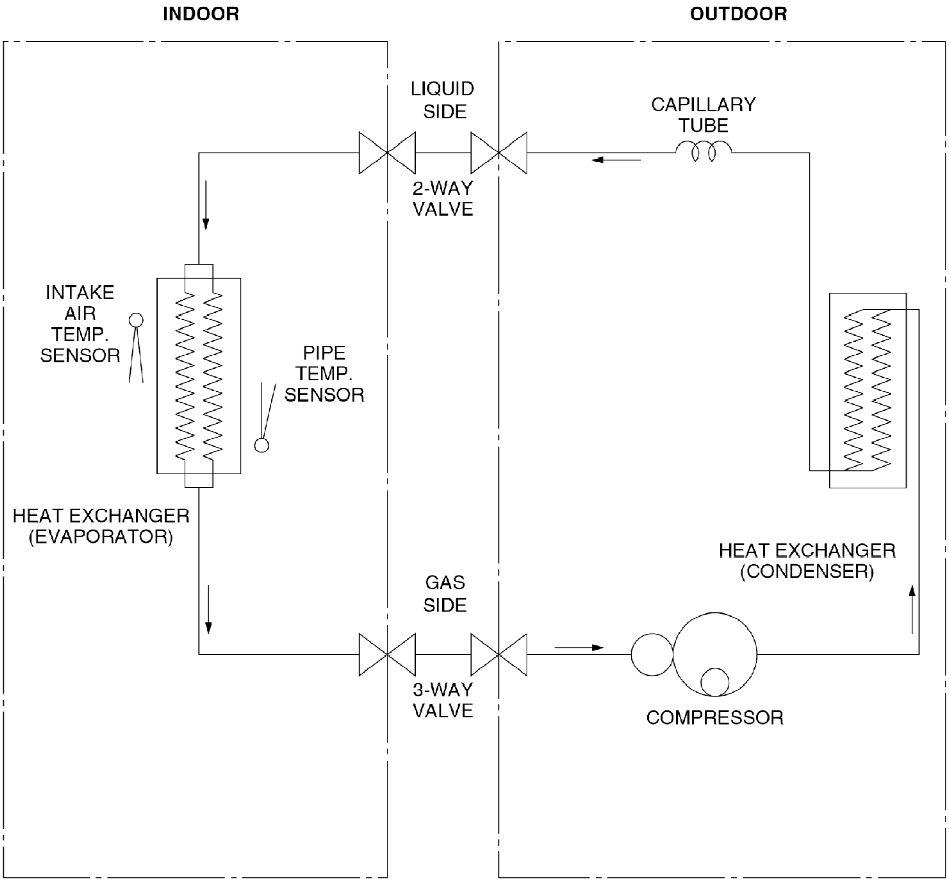

47
680 ± 1
73
108.8
472
99.2
16.5
Installation plate
Indoor unit external dimensions line
Left piping hole
Right piping hole
254.2
70
150
125
99

CU-C9BKN5G / CU-C12BKN5G


Space necessary for installation
10 cm
10 cm
100 cm
Anchor Bolt Pitch 320 x 570
<Top View>
24.4
780
67.6
(104.7)
570
104.9
60.5
34.5
84.8
155
2-way valve at Liquid side (High Pressure)
3-way valve at Gas side (Low Pressure)
<Side View>
<Front View>
69.6
61.6
(18)
<Side View>
11.5
289
540
320
352

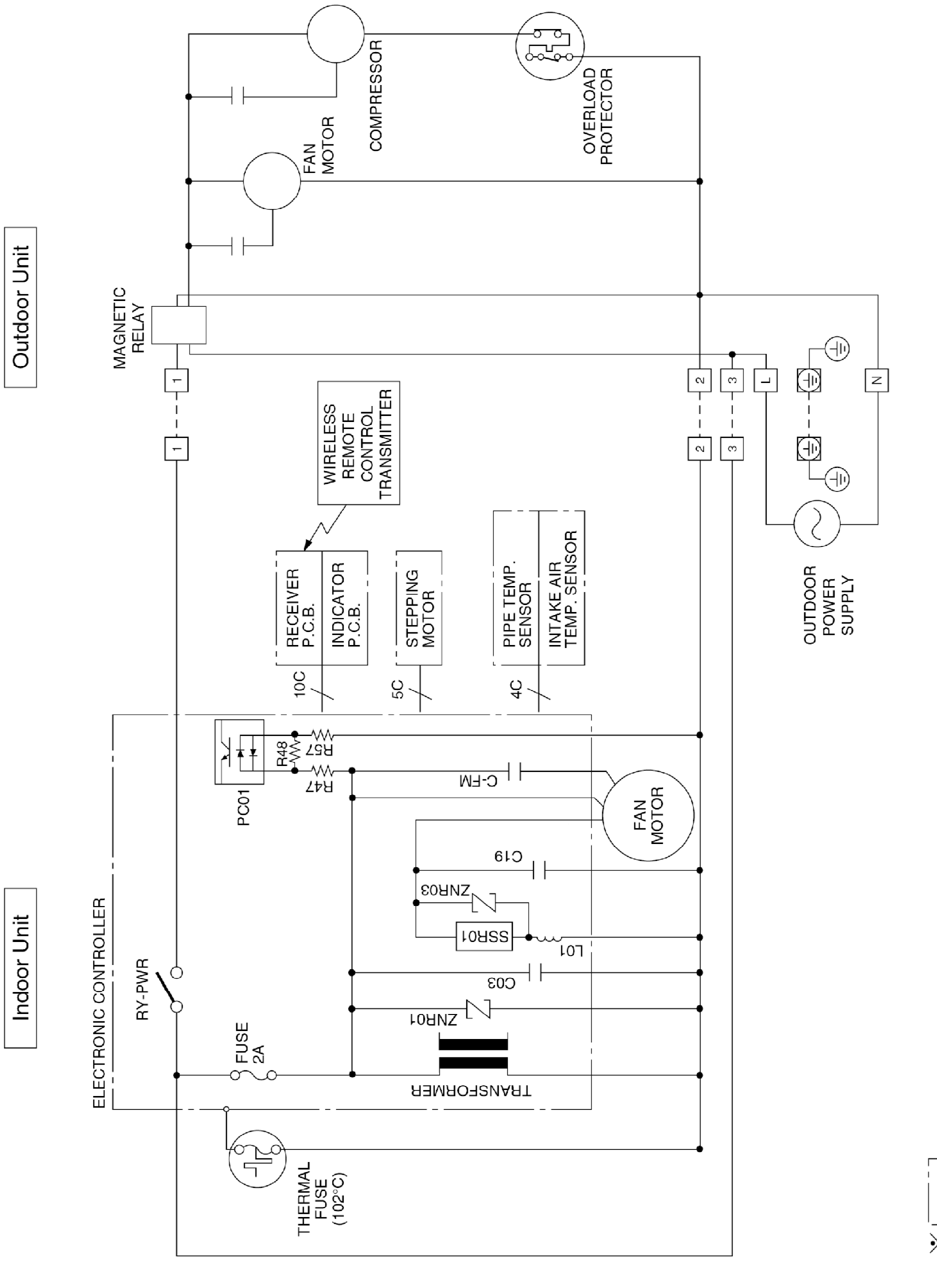
5. Refrigeration Cycle Diagram

CS-C9BKNG / CU-C9BKN5G
CS-C12BKNG / CU-C12BKN5G


INDOOR
OUTDOOR
LIQUID SIDE
2-WAY VALVE
CAPILLARY TUBE
INTAKE AIR TEMP. SENSOR
PIPE TEMP. SENSOR
HEAT EXCHANGER (EVAPORATOR)
HEAT EXCHANGER (CONDENSER)
GAS SIDE
3-WAY VALVE
COMPRESSOR

6. Block Diagram

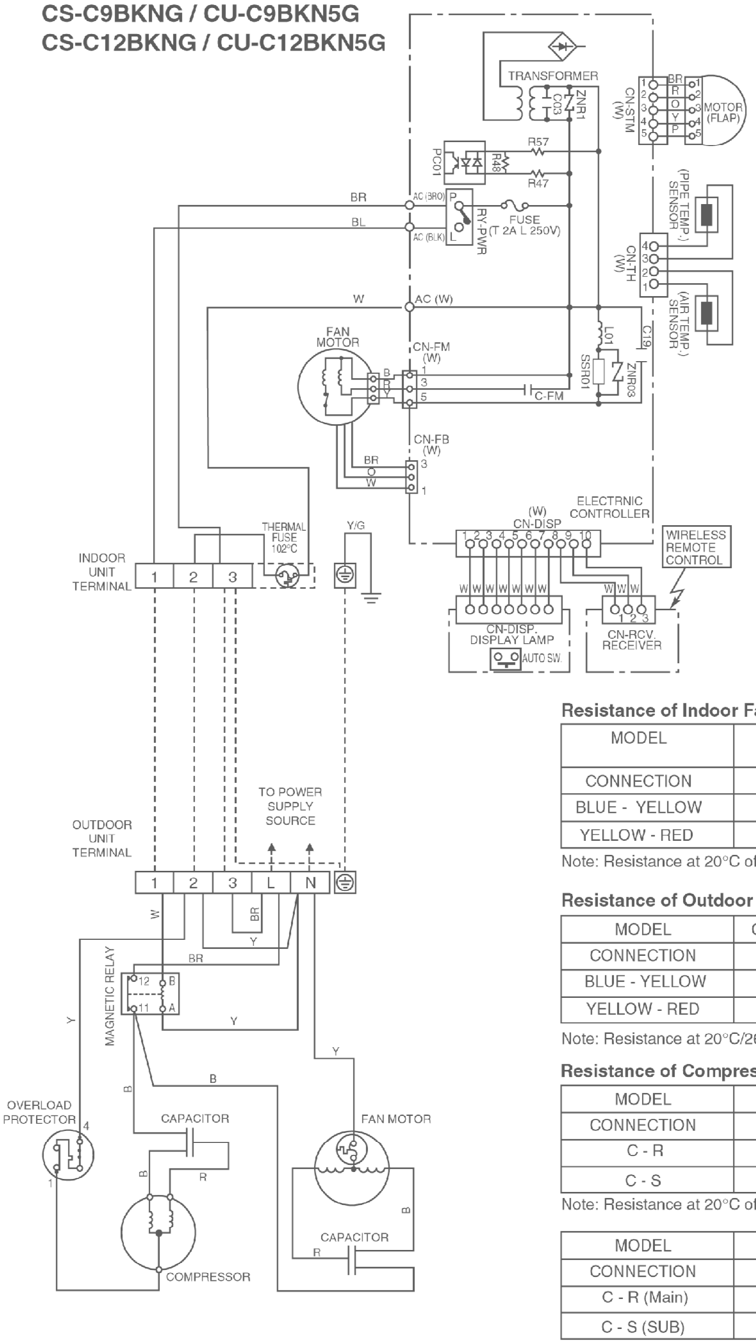
CS-C9BKNG / CU-C9BKN5G
CS-C12BKNG / CU-C12BKN5G

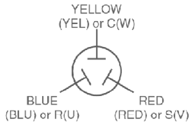

Outdoor Unit
Indoor Unit
COMPRESSOR
FAN MOTOR
OVERLOAD PROTECTOR
MAGNETIC RELAY
1
2
3
L
N
WIRELESS REMOTE CONTROL TRANSMITTER
RECEIVER P.C.B.
INDICATOR P.C.B.
STEPPING MOTOR
PIPE TEMP. SENSOR
INTAKE AIR TEMP. SENSOR
OUTDOOR POWER SUPPLY
10C
5C
4C
ELECTRONIC CONTROLLER
PC01
R48
R57
R47
C-FM
FAN MOTOR
C19
ZNR03
SSR01
L01
C03
ZNR01
RY-PWR
FUSE 2A
TRANSFORMER
THERMAL FUSE (102°C)

※ [ ] Indicates the electronic control unit.
※ "C" Indicates the number of core wires. (Example: 6C=6 core wires)

7. Wiring Diagram

CS-C9BKNG / CU-C9BKN5G
CS-C12BKNG / CU-C12BKN5G


TRANSFORMER
CO3
ZNR1
CN-STM (W)
BR R O Y P
MOTOR (FLAP)
PC01
R48
R57
R47
BR
BL
AC (BRO)
AC (BLK)
P
L
RY-PWR
FUSE (T 2A L 250V)
(PIPE TEMP.) SENSOR
CN-TH (W)
(AIR TEMP.) SENSOR
W
AC (W)
FAN MOTOR
CN-FM (W)
B
GRY
Y
C-FM
L01
C19
SSR01
ZNR03
CN-FB (W)
BR
O
W
ELECTRNIC CONTROLLER
(W) CN-DISP
WIRELESS REMOTE CONTROL
CN-DISP. DISPLAY LAMP
AUTO SW.
CN-RCV. RECEIVER
THERMAL FUSE 102°C
Y/G
INDOOR UNIT TERMINAL
1 2 3
TO POWER SUPPLY SOURCE
OUTDOOR UNIT TERMINAL
1 2 3 L N
MAGNETIC RELAY
12 11 B A
OVERLOAD PROTECTOR
CAPACITOR
COMPRESSOR
FAN MOTOR
CAPACITOR
R
S
C


YELLOW (YEL) or C(W)
BLUE (BLU) or R(U)
RED (RED) or S(V)

COMPRESSOR TERMINAL

Remarks:

B	: BLUE
BR	: BROWN
BL	: BLACK
GRY	: GRAY
O	: ORANGE
P	: PINK
R	: RED
W	: WHITE
Y/G	: YELLOW / GREEN

Resistance of Indoor Fan Motor Windings

MODEL	CS-C9BKNG CS-C12BKNG
CONNECTION	CWA921060
BLUE - YELLOW	371.0 Ω
YELLOW - RED	388.6 Ω

Note: Resistance at 20°C of ambient temperature.

Resistance of Outdoor Fan Motor Windings

MODEL	CU-C9BKN5G	CU-C12BKN5G
CONNECTION	CWA951088	CWA951120
BLUE - YELLOW	217.3 Ω	200.4 Ω
YELLOW - RED	198.5 Ω	252.5 Ω

Note: Resistance at 20°C/26°C of ambient temperature.

Resistance of Compressor Windings

MODEL	CU-C9BKN5G
CONNECTION	2PS146D3AA04
C - R	3.941 Ω
C - S	3.499 Ω

Note: Resistance at 20°C of ambient temperature.

MODEL	CU-C12BKN5G
CONNECTION	QJ222PBA
C - R (Main)	2.50 Ω
C - S (SUB)	4.13 Ω

Note: Resistance at 25°C of ambient temperature.

8. Operation Details

8.1. Cooling Mode Operation

Cooling in operation according to Remote Control setting.

Time Delay Safety Control (3 minutes)

- **When the compressor is stopped by Remote Control, it restarts after 3 minutes when the Remote Control is turned ON.**
- **When the setting temperature is reached during cooling operation, the compressor stops and it will not start for 3 minutes.**

7 minutes Time Save Control

- **The compressor will start automatically if it has stopped for 7 minutes even if the room temperature is between the compressor ON temperature and OFF temperature.**

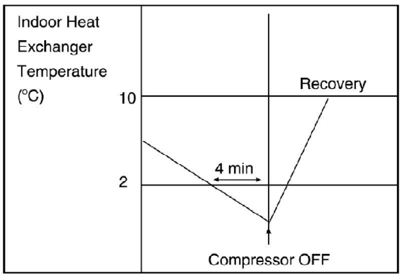
Starting Current Control

- **When the compressor outdoor fan motor and indoor fan motor are simultaneously started, the indoor fan motor will operate 1.6 second later.**

Anti-Freezing Control

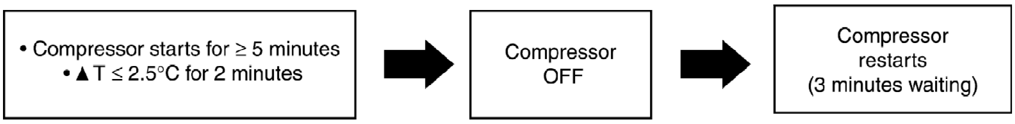
- **If the temperature of the indoor heat exchanger falls continuously below 2°C for 4 minutes or more, the compressor turns off to protect the indoor heat exchanger from freezing. The fan speed setting remains the same.**
- **Compressor will restart again when the indoor heat exchanger temperature rises to 10°C (Recovery).**

※ 3 minutes waiting of Time Delay Safety Control is valid for Cooling Operation.



Compressor Reverse Rotation Protection Control

- If the compressor is operating continuously for 5 minutes or longer and the temperature difference between intake air and indoor heat exchanger is 2.5°C or less for 2 minutes, compressor will stop and restart automatically. / (Time Delay Safety Control is valid)


• Compressor starts for ≥ 5 minutes
• ▲T ≤ 2.5°C for 2 minutes
Compressor OFF
Compressor restarts (3 minutes waiting)

▲ T = Intake air temperature - Indoor heat exchanger temperature / This is to protect reverse rotation of the compressor when there is a instantaneous power failure.

Anti-Dew Formation Control

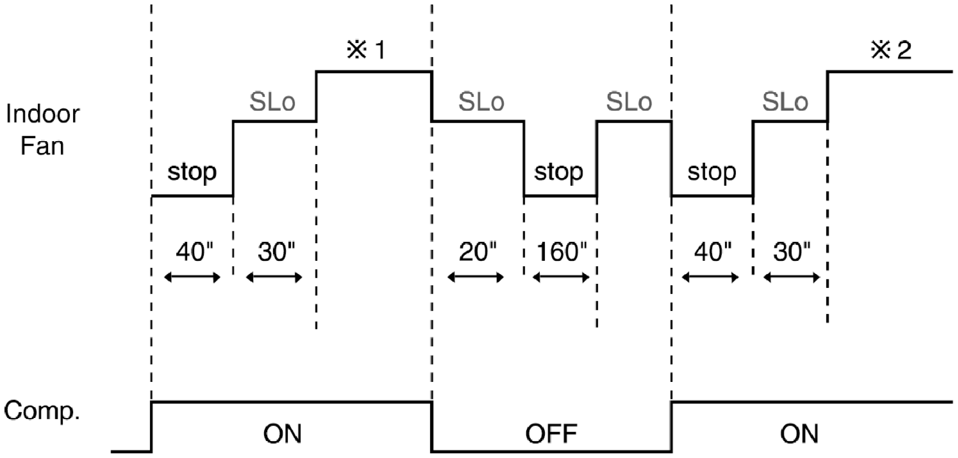
- Purpose is to prevent dew formation on indoor unit air discharge area.
- When the following conditions accur for 30 minutes continuously, anti-dew formation is controlled by indoor fan speed shift to low (CLo to HLo):
- Indoor intake air temperature is more than 24°C and less than 30°C.
- Remote Control setting temperature is less than 25°C.
- Compressor is on.
- Cooling operation mode.
- Indoor Fan motor operate at Low fan speed.
- This control is cancelled immediately when above condition is changed.

Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during cooling operation.

- Fan speed rotates in the range of Hi to Me.

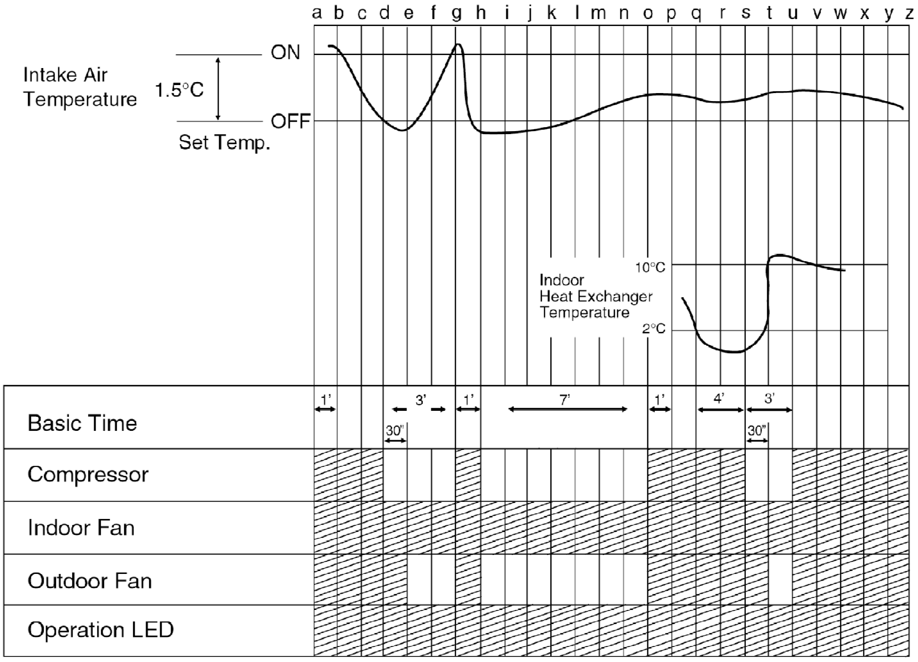
- Deodorizing Control.


Indoor Fan
stop
SLo
※1
SLo
SLo
stop
stop
SLo
※2
40"
30"
20"
160"
40"
30"
Comp.
ON
OFF
ON

※ 1 Fan Speed is Hi until the compressor stops (when the room temperature reaches setting temperature).

※ 2 Fan Speed is Me after the compressor restarts.

Cooling Operation Time Diagram


a b c d e f g h i j k l m n o p q r s t u v w x y z
Intake Air Temperature
1.5°C
ON
OFF
Set Temp.
Indoor Heat Exchanger Temperature
10°C
2°C
1'
3'
1'
7'
1'
4'
3'
30"
30"
Basic Time
Compressor
Indoor Fan
Outdoor Fan
Operation LED

<Description of operation>

d – g : Time Delay Safety Control (waiting for 3 minutes)
g – h : 60 sec. Forced Operation
h – o : 7 min. Time Save Control
q – u : Anti Freezing Control

▨ Operation
☐ Stop

8.2. Soft Dry Mode Operation

- The unit starts cooling operation until the room temperature

reaches the setting temperature set on the Remote Control, and then Soft Dry operation will start.

- **During Soft Dry operation, the Indoor Fan will operate at SLo speed.**
- **The operation will be switched on and off for up to 10 minutes "ON" and 6 minutes "OFF". Once Soft Dry operation is turned off, it stops for 6 minutes.**

Time Delay Safety Control

- **Once the compressor stops, it will not start for 3 minutes during Cooling operation.**

Starting Current Control

- **Same as Starting Current Control for Cooling Mode operation.**

Anti-Freezing Control

- **Same as Anti-Freezing Control for Cooling Mode operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.)**

Compressor Reverse Rotation Protection Control

- **Same as Compressor Reverse Rotation Protection Control for Cooling Mode Operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.)**

Anti-Dew Formation Control

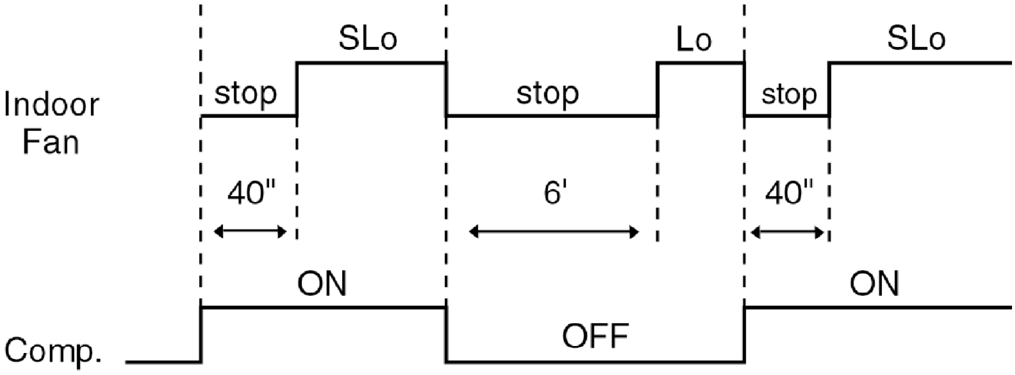
- **Same as Anti-Dew Formation Control for Cooling Mode operation.**

Automatic Fan Speed Mode

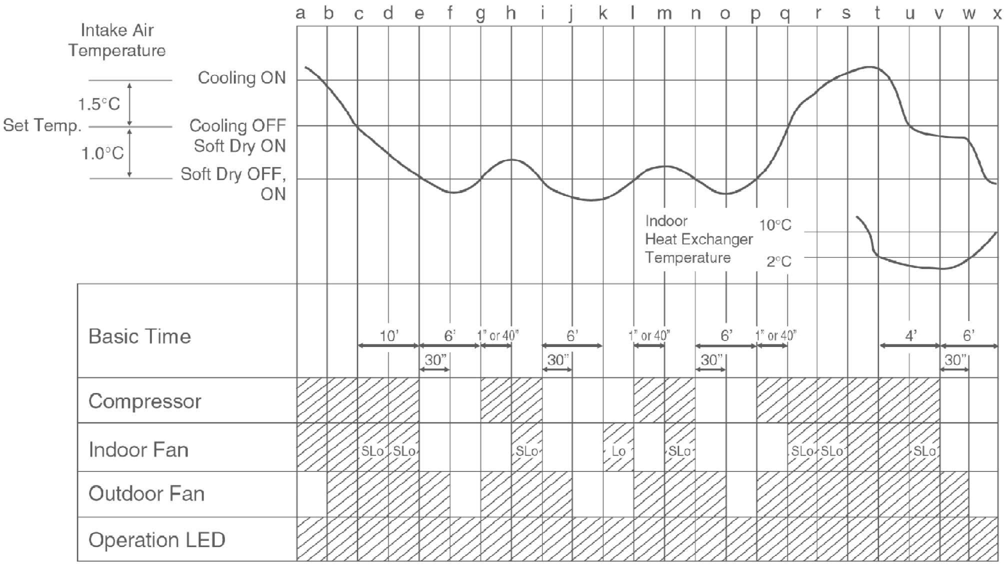
When Automatic Fan Speed is selected at Remote Control during Soft Dry operation.

- Fan speed off and on at SLo speed.

- Deodorizing Control.


Indoor Fan
stop
SLo
stop
Lo
stop
SLo
40"
6'
40"
ON
OFF
ON
Comp.

Soft Dry Operation Time Diagram


a b c d e f g h i j k l m n o p q r s t u v w x
Intake Air Temperature
Cooling ON
1.5°C
Set Temp.
Cooling OFF
Soft Dry ON
1.0°C
Soft Dry OFF, ON
Indoor Heat Exchanger Temperature
10°C
2°C
Basic Time
10'
6'
1" or 40"
6'
1" or 40"
6'
1" or 40"
4'
6'
30"
30"
30"
30"
Compressor
Indoor Fan
SLo
SLo
SLo
Lo
SLo
SLo
SLo
SLo
Outdoor Fan
Operation LED

<Description of operation>

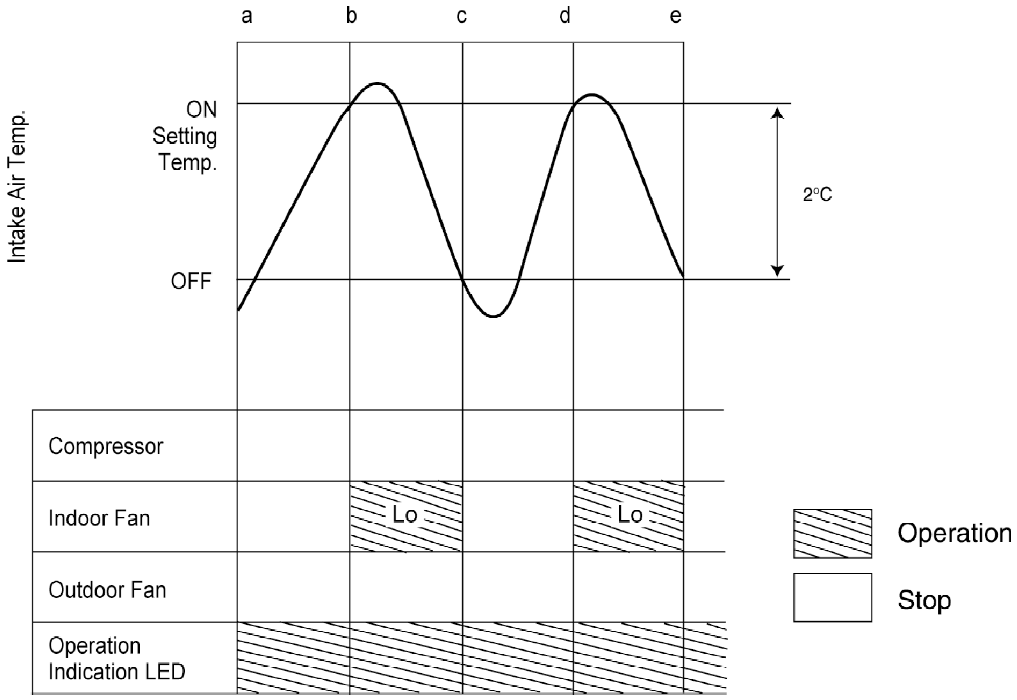
a – c : Cooling Operation
c – s : Soft Dry Operation
e – g : Soft Dry OFF
l – m : 60 sec. Forced Operation
t – x : Anti Freezing Control

▨ Operation
☐ Stop

8.3. Air Circulation Mode Operation

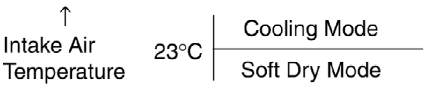
- When the temperature near the ceiling reaches the setting temperature, Air Circulation Mode operation commences at low airflow volume. It stops when the temperature drops to 2°C below the setting temperature. /

Air Circulation Mode Operation Time Diagram


a
b
c
d
e
Intake Air Temp.
ON
Setting Temp.
OFF
2°C
Compressor
Indoor Fan
Lo
Lo
Outdoor Fan
Operation Indication LED
Operation
Stop

8.4. Automatic Mode Operation

Standard for Determining Operation Mode


↑
Intake Air Temperature
23°C
Cooling Mode
Soft Dry Mode

	Setting Temperature (Standard)
Cooling Mode	25°C
Soft Dry Mode	22°C

- Indoor fan operates at SLo fan speed for 25 seconds.

- After judging indoor air temperature, the operation mode is determined and operation continued at the mode determined.

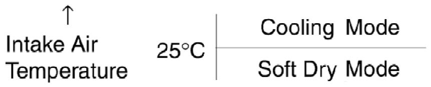
- After the operation mode has been determined, the mode does not change. However, Soft Dry mode operation includes Cooling

mode operation.

- **Room temperature adjustment.**
  The following are added to the setting temperature specified as above.

	Cooling	Soft Dry
Higher → +2°C	27°C	24°C
Standard → ±0°C	25°C	22°C
Lower → –2°C	23°C	20°C

- **The mode judging temperature and standard setting temperature can be increased by 2°C, by open the circuit of JX1 at indoor electronic controller.**



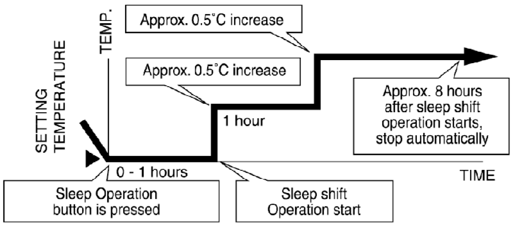
	Setting Temperature (Standard)
Cooling Mode	27°C
Soft Dry Mode	24°C

8.5. Sleep Mode Auto Operation

Cooling or Soft Dry Operation

Purpose is to obtain a comfortable room temperature while sleeping. When you press the SLEEP Mode, the following movement will start to avoid overcooling. /

- **Sleep shift operation starts, when the room temperature reaches the setting temperature or after 1 hour of operation.**
- **The setting temperature will be risen by 0.5°C at the start of operation and by 0.5°C one hour later.**
- **The airflow volume will automatically change to Lo fan speed.**
- **Sleep Mode operation time is 8 hours, the operation will be stop after 8 hours.**
- **When used together with the Timer, the Timer has priority.**


TEMP.
SETTING TEMPERATURE
Approx. 0.5˚C increase
Approx. 0.5˚C increase
1 hour
Approx. 8 hours after sleep shift operation starts, stop automatically
0 - 1 hours
TIME
Sleep Operation button is pressed
Sleep shift Operation start

8.6. Powerful Mode Operation

- **Purpose of this operation is to obtain the setting temperature quickly. /**
- **When the Powerful Mode is set, the set temperature will be automatically decreased 3°C against the present setting temperature (Lower temperature: 16°C). /**
- **This operation automatically will be running under SHi Fan Speed (Cooling), SLo Fan Speed (Soft Dry). /**
- **Vertical Airflow Direction:-**
  - **In “Manual” setting, the vane will automatically swing down 10° lower than previous setting.**
  - **In “Auto” setting, the vane will automatically swing up and down. However the lower limit will be shifted 10° downward. /**
- **Powerful Mode will operate for 15 minutes only, after that it will shift back to previous operation mode. /**
- **Powerful Mode will stop if:-**
  - **Powerful mode button is pressed again.**
  - **Stopped by ON / OFF switch.**
  - **Timer OFF activates.**
  - **Economy mode button is pressed.**
  - **Sleep mode is pressed.**
  - **Operation mode button is changed.**

8.7. Economy Mode Operation

- **Purpose of this operation is to save or reduced electrical power consumption of the room air conditioner. /**
- **When the Economy Mode is set, the set temperature will be automatically increased 0.5°C against the preset setting temperature (Higher temperature: 30°C). /**
- **This operation automatically will be running under SLo Fan Speed. /**

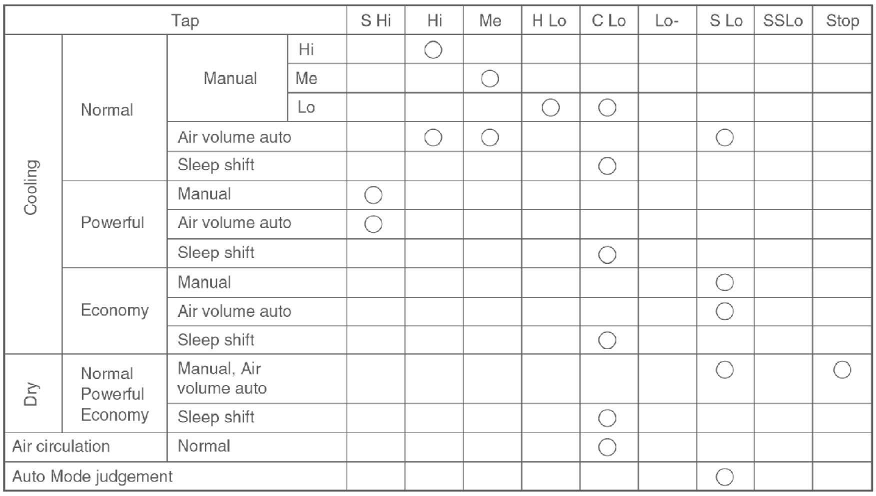
- **Vertical Airflow Direction:-**
  In “Manual” or “Auto” setting, the vane will automatically change to Auto Air Swing. /
- **Economy Mode will stop if:-**
  - **Economy Mode button is pressed again.**
  - **Stopped by ON / OFF switch.**
  - **Timer OFF activates.**
  - **Powerful mode button is pressed.**
  - **Auto or Manual air swing button is pressed.**
  - **Fan Speed control button is pressed.**
  - **Sleep Mode button is pressed ON.**
  - **Operation Mode is changed.**

8.8. Random Auto Restart Control

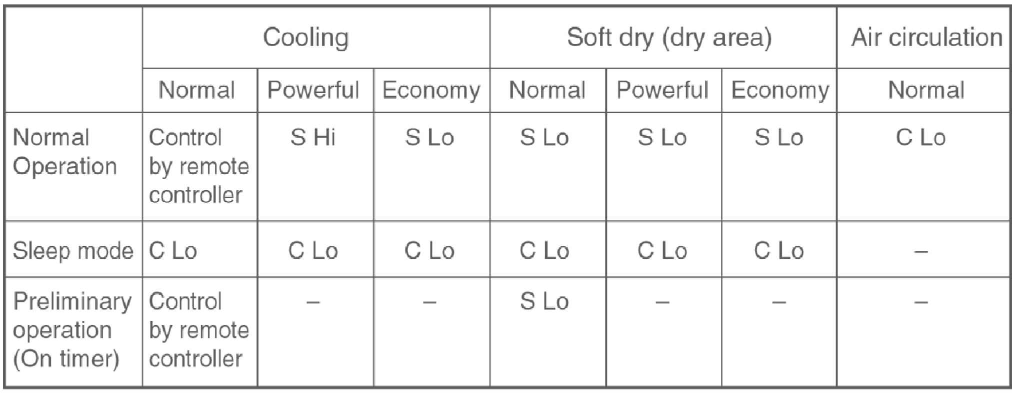
- **If there is a power failure, operation will be automatically restarted after 3 to 5 1/2 minutes when the power is resumed.**
  It will start with previous operation mode and airflow direction. /
- **Restart time is decided randomly using 4 parameter:-**
  Intake air temperature, setting temperature, fan speed and Air Swing Blade position. /
- **Auto Restart Control is not available when Timer or Sleep Mode is set. /**
- **This control can be omitted by open the circuit of JX2. (Refer Circuit Diagram) /**

8.9. Indoor Fan Speed Control

- **Auto Fan Speed Control**
  When set to Auto Fan Speed, the fan speed is adjusted between maximum and minimum setting as shown in the table. /
- **Manual Fan Speed Control**
  Basic fan speed adjustment (3 settings, from Lo to Hi) can be carried out by using the Fan Speed selection button at the remote control. /



Tap				S Hi	Hi	Me	H Lo	C Lo	Lo-	S Lo	SSLo	Stop
Cooling	Normal	Manual	Hi		○							
			Me			○						
			Lo				○	○				
		Air volume auto			○	○				○		
		Sleep shift						○				
	Powerful	Manual		○								
		Air volume auto		○								
		Sleep shift						○				
	Economy	Manual								○		
		Air volume auto								○		
		Sleep shift						○				
Dry	Normal Powerful Economy	Manual, Air volume auto								○		○
		Sleep shift						○				
Air circulation		Normal						○				
Auto Mode judgement										○		

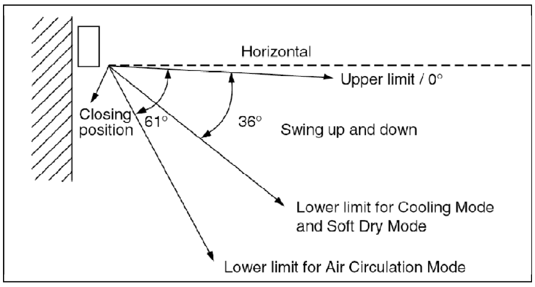


	Cooling			Soft dry (dry area)			Air circulation
	Normal	Powerful	Economy	Normal	Powerful	Economy	Normal
Normal Operation	Control by remote controller	S Hi	S Lo	S Lo	S Lo	S Lo	C Lo
Sleep mode	C Lo	C Lo	C Lo	C Lo	C Lo	C Lo	–
Preliminary operation (On timer)	Control by remote controller	–	–	S Lo	–	–	–

8.10. Vertical Airflow Direction Control

Vertical Airflow Direction Auto-Control

- **When set a Airflow Direction Auto-Control with remote control, the louver swings up and down as shown in the diagram.**
- **The louver does not swing when the Indoor Fan Motor stops during operation at the upper limit.**
- **When stopped with remote control, the discharge vent is reset, and stopped at the closing position.**


Horizontal
Upper limit / 0°
Closing position
61°
36°
Swing up and down
Lower limit for Cooling Mode and Soft Dry Mode
Lower limit for Air Circulation Mode

※ The left and right airflow direction louvers can be adjusted manually.

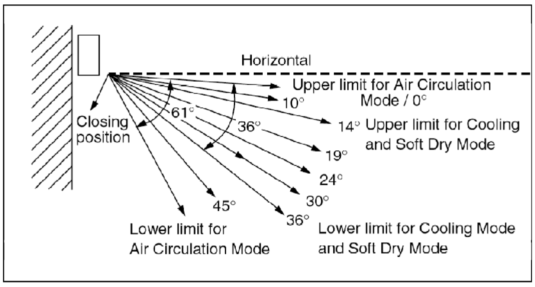
※1. There is no swinging while indoor fan motor is stopped during Cooling and Soft Dry operati

※2. In Air Circulation operation, when the intake air temperature reaches set temperature, the ai direction is changed from upper limit to lower limit. When the intake air temperature falls to than set temperature, the airflow direction is changed from lower limit to upper limit.

Vertical Airflow Direction manual Control

- When the manual Airflow Direction Selection Button is pressed, the automatic airflow is released and the airflow direction louver move up and down in the range shown in the diagram. The louver can be adjusted by pressing the button to the desired louver position.

- When the remote control is used to stop the operation, the discharge vent is reset, and stopped at the closing position.


Horizontal
Upper limit for Air Circulation Mode / 0°
10°
Closing position
61°
36°
14° Upper limit for Cooling and Soft Dry Mode
19°
24°
30°
45°
36°
Lower limit for Air Circulation Mode
Lower limit for Cooling Mode and Soft Dry Mode

※ The left and right airflow direction louvers can be adjusted manually.

8.11. Delay ON Timer Control

- When the Delayed ON Timer is set by using the remote control, the unit will start operate slightly before the set time, so that the room will reach nearly to the set temperature by the desired time.

- For Cooling and Soft Dry mode, the operation will start 15 minutes before the set time.

- For Automatic mode, the indoor fan will operate at SLo speed for 25 seconds, 15 minutes before the set time to detect the intake air temperature to determine the operation mode. The operation indication lamp will blink at this time.

8.12. Remote Control Signal Receiving Sound

- Long beep sound will be heard when:-
- Stopping the Air Conditioner using ON/OFF switch.
- Stopping the Sleep Mode.
- Stopping the Powerful Mode.
- Stopping the Economy Mode.
- Short beep sound will be heard for others.
- To switch off the beep sound:-
  Press the “Automatic Operation Button” continuously for 10 seconds or more (“beep” “beep” will be heard at the 10th second).
  Repeat the above if you want to switch ON the beep sound.

※ However, if the “Automatic Operation Button” has been pressed the Automatic operation will b
activated.
If you do not require this operation, you may change it by using the remote control.

9. Operating Instructions

10. Installation Instructions

Required tools for Installation Works			
1. Philips screw driver	5. Spanner	9. Gas leak detector	13. Multimeter
2. Level gauge	6. Pipe cutter	10. Measuring tape	14. Torque wrench 18 N.m (1.8 kgf.m) 42 N.m (4.2 kgf.m) 55 N.m (5.5 kgf.m)
3. Electric drill, hole core drill (ø70 mm)	7. Reamer	11. Thermometer	15. Vacuum pump
4. Hexagonal wrench (4 mm)	8. Knife	12. Megameter	16. Gauge manifold

10.1. Safety Precautions

- Read the following “SAFETY PRECAUTIONS” carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure

to use the correct rating of the power plug and main circuit for the model to be installed.

- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

⚠ WARNING	**This indication shows the possibility of causing death or serious injury.**

⚠ CAUTION	**This indication shows the possibility of causing injury or damage to prop**

The items to be followed are classified by the symbols:

🛇	**Symbol with background white denotes item that is PROHIBITED from do**

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

WARNING

1. Engage dealer or specialist for installation. If installation done by the user is defective, it will c
   water leakage, electrical shock or fire.
2. Install according to this installation instruction strictly. If installation is defective, it will cause
   leakage, electrical shock or fire.
3. Use the attached accessories parts and specified parts for installation. Otherwise, it will cause
   to fall, water leakage, fire or electrical shock.
4. Install at a strong and firm location which is able to withstand the set's weight. If the strength i
   enough or installation is not properly done, the set will drop and cause injury.
5. For electrical work, follow the local national wiring standard, regulation and this installation
   instruction. An independent circuit and single outlet must be used. If electrical circuit capacity
   enough or defect found in electrical work, it will cause electrical shock or fire.
6. Use the specified cable (1.5 mm2) and connect tightly for indoor/outdoor connection. Connect
   and clamp the cable so that no external force will be acted on the terminal. If connection or fix
   perfect, it will cause heat-up or fire at the connection.
7. Wire routing must be properly arranged so that control board cover is fixed properly. If control
   cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electric
8. When carrying out piping connection, take care not to let air substances other than the specifi
   refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high p
   in the refrigeration cycle, explosion and injury.
9. Do not damage or use unspecified power supply cord. Otherwise, it will cause fire or
   electrical shock.
10. Do not modify the length of the power supply cord or use of the extension cord, and do not
    share the single outlet with other electrical appliances. Otherwise, it will cause fire or
    electrical shock.

CAUTION

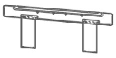
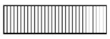
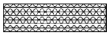
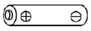
1. This equipment must be earthed. It may cause electrical shock if grounding is not perfect.
2. Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.
3. Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, enter the room and damage the furniture.

ATTENTION

1. Selection of the installation location.
   Select a installation location which is rigid and strong enough to support or hold the unit, and location for easy maintenance.
2. Power supply connection to the room air conditioner.
   Connect the power supply cord of the room air conditioner to the mains using one of the follo method.
   Power supply point shall be the place where there is ease for access for the power disconnect case of emergency.
   In some countries, permanent connection of this room air conditioner to the power supply is p

   1. Power supply connection to the receptacle using a power plug. / Use an approved 15A/16A power plug with earth pin for the conne socket.
   2. Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker for the permanen It must be a double pole switch with a minimum 3 mm contact gap.
3. Do not release refrigerant.
   Do not release refrigerant during piping work for installation, reinstallation and during repairin refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
4. Installation work.
   It may need two people to carry out the installation work.
5. Do not install this appliance in a laundry room or other location where water may drip from the etc.

Attached accessories

No.	Accesories part	Qty.	No.	Accessories part	Qty.
1	Installation plate 	1	5	Air purifying filter 	1
2	Installation plate fixing screw	6	6	Solar refreshing deodorizing filter 	1
3	Remote control	1	7	Remote Control holder	1
4	Battery 	2	8	Remote Control holder fixing screw	2

Applicable piping kit
CZ-3F5, 7AEN (C9BKNG)
CZ-4F5, 7, 10AN (C12BKNG)

SELECT THE BEST LOCATION

INDOOR UNIT

- **There should not be any heat source or steam near the unit.**
- **There should not be any obstacles blocking the air circulation.**
- **A place where air circulation in the room is good.**
- **A place where drainage can be easily done.**
- **A place where noise prevention is taken into consideration.**
- **Do not install the unit near the door way.**
- **Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.**
- **Recommended installation height for indoor unit shall be at least 2.3 m.**

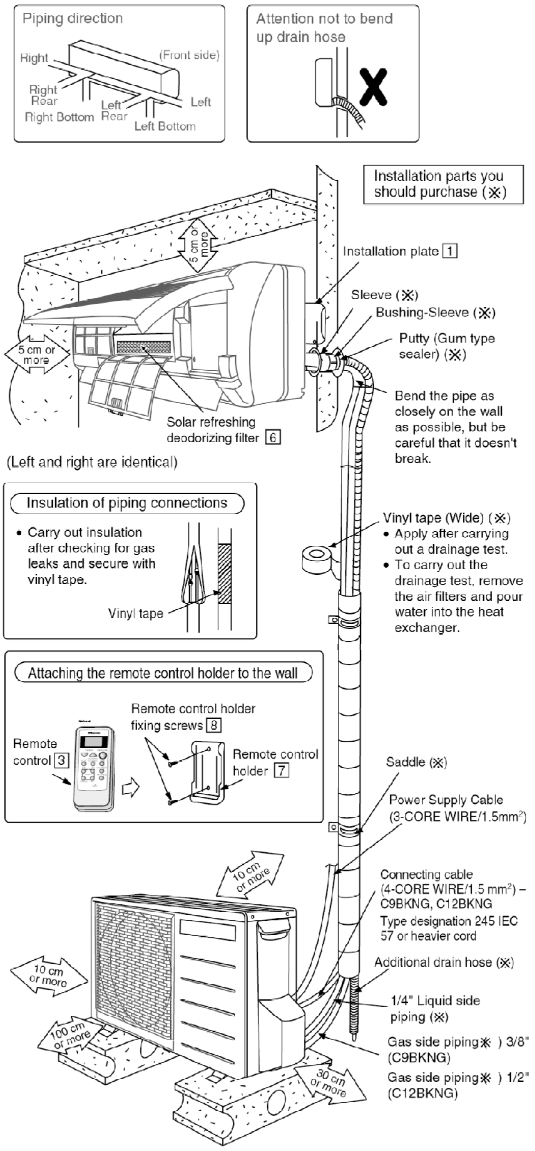
OUTDOOR UNIT

- **If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.**
- **There should not be any animal or plant which could be affected by hot air discharged.**
- **Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.**
- **Do not place any obstacles which may cause a short circuit of the discharged air.**

- If piping length is over the common length, additional refrigerant should be added as shown in the table.

Model	Piping size		Common Length (m)	Max. Elevation (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)
	Gas	Liquid				
C9BKNG	**3/8”**	**1/4”**	**7.5**	**5**	**10**	**10**
C12BKNG	**1/2”**	**1/4”**	**7.5**	**5**	**15**	**10**

Indoor/Outdoor Unit Installation Diagram


Piping direction
Hight
(Front side)
Right Rear
Right Bottom
Left Rear
Left
Left Bottom
Attention not to bend up drain hose
X
Installation parts you should purchase (※)
5 cm or more
Installation plate 1
Sleeve (※)
Bushing-Sleeve (※)
Putty (Gum type sealer) (※)
5 cm or more
Bend the pipe as closely on the wall as possible, but be careful that it doesn't break.
Solar refreshing deodorizing filter 6
(Left and right are identical)
Insulation of piping connections
• Carry out insulation after checking for gas leaks and secure with vinyl tape.
Vinyl tape
Vinyl tape (Wide) (※)
• Apply after carrying out a drainage test.
• To carry out the drainage test, remove the air filters and pour water into the heat exchanger.
Attaching the remote control holder to the wall
Remote control holder fixing screws 8
Remote control 3
Remote control holder 7
Saddle (※)
Power Supply Cable (3-CORE WIRE/1.5mm²)
10 cm or more
Connecting cable (4-CORE WIRE/1.5 mm²) – C9BKNG, C12BKNG
Type designation 245 IEC 57 or heavier cord
10 cm or more
Additional drain hose (※)
1/4" Liquid side piping (※)
100 cm or more
Gas side piping※) 3/8" (C9BKNG)
Gas side piping※) 1/2" (C12BKNG)
30 cm or more

- This illustration is for explanation purposes only. / The indoor unit

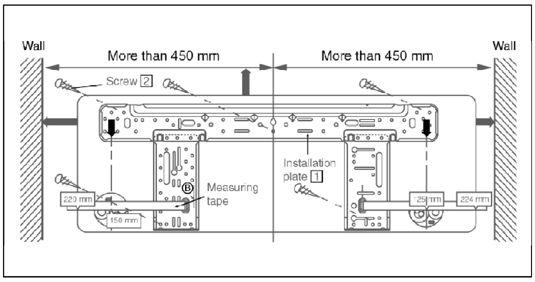
will actually face a different way.

10.2. INDOOR UNIT

10.2.1. SELECT THE BEST LOCATION / (Refer to “Select the best location” section)

10.2.2. HOW TO FIX INSTALLATION PLATE

The mounting wall is strong and solid enough to prevent it from the vibration.



The centre of installation plate should be at more than 450 mm at right and left of the wall.
The distance from installation plate edge to ceiling should more than 67 mm.
From installation plate left edge to unit’s left side is 47 mm.
From installation plate right edge to unit’s right is 73 mm.

Ⓑ : For left side piping, piping connection for liquid should be about 14 mm from this line.

: For left side piping, piping connection for gas should be about 56 mm from this line.

: For left side piping, piping connecting cable should be about 785 mm from this line.

1. **Mount the installation plate on the wall with 5 screws or more. / (If mounting the unit on the concrete wall consider using anchor bolts.)**
   - **Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.**
2. **Drill the piping plate hole with ø70 mm hole-core drill.**
   - **Line according to the arrows marked on the lower left and right side of the installation plate. The meeting point of the extended line is the centre of the hole. Another method is by putting measuring tape at position as shown in the diagram above. The hole centre is obtained by measuring the distance namely 150 mm and 125 mm for left and right hole respectively.**

- Drill the piping hole at either the right or the left and the hole should be slightly slanted to the outdoor side.

10.2.3. TO DRILL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPING

1. Insert the piping sleeve to the hole.

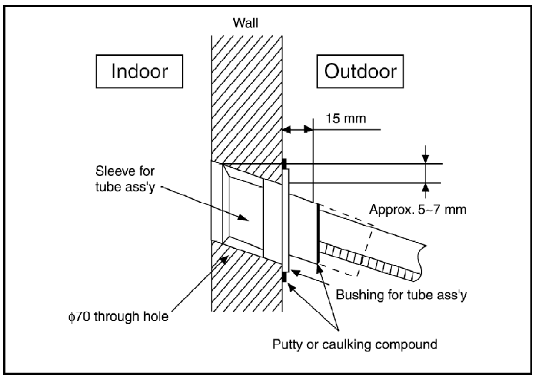
2. Fix the bushing to the sleeve.

3. Cut the sleeve until it extrudes about 15 mm from the wall.

Caution

When the wall is hollow, please be sure to use the sleeve for tube ass'y to prevent dangers caused by mice biting the connecting cable.

4. Finish by sealing the sleeve with putty or caulking compound at the final stage.


Wall
Indoor
Outdoor
15 mm
Sleeve for tube ass'y
Approx. 5~7 mm
Bushing for tube ass'y
ϕ70 through hole
Putty or caulking compound

10.2.4. INDOOR UNIT INSTALLATION

1. For the right rear piping

Pull out the Indoor piping
⬇
Install the Indoor Unit
⬇
Secure the Indoor Unit
⬇
Insert the connecting cable

2. For the right and right bottom piping

Pull out the Indoor piping

↓

Install the Indoor Unit

↓

Insert the connecting cable

↓

Secure the Indoor Unit

3. For the embedded piping

Replace the drain hose

↓

Bend the embedded piping

↓

- Use a spring bender or equivalent to bend the piping so that the piping is not crushed.

Install the Indoor Unit

↓

Cut and flare the embedded piping

↓

- When determing the dimension of the piping, slide the unit all the way to the left on the installation plate.
  Refer to the section "Cutting and flaring the piping".

Pull the connecting cable into Indoor Unit

↓

- The inside and outside connecting cable can be connected without removing the front grille.

Connect the piping

↓

- Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)

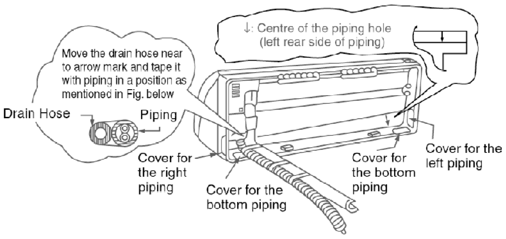
Insulate and finish the piping

↓

- Please refer to "Piping and finishing" column of outdoor section and "Insulation of piping connections" column as mentioned in Indoor/ Outdoor Unit Installation.

Secure the Indoor Unit

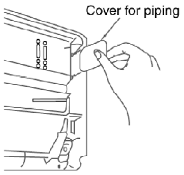
Pull out the piping and drain hose


↓: Centre of the piping hole
(left rear side of piping)
Move the drain hose near to arrow mark and tape it with piping in a position as mentioned in Fig. below
Drain Hose
Piping
Cover for the right piping
Cover for the bottom piping
Cover for the bottom piping
Cover for the left piping

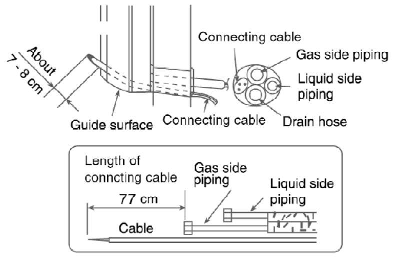
How to keep the cover

In case of the cover is cut, keep the cover at the rear of chassis as shown in the illustration for future reinstallation.

(Left, right and 2 bottom covers for piping)

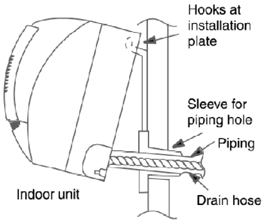

Cover for piping

Insert the connecting cable


About 7 ~ 8 cm
Connecting cable
Gas side piping
Liquid side piping
Guide surface
Connecting cable
Drain hose
Length of connecting cable
77 cm
Cable
Gas side piping
Liquid side piping

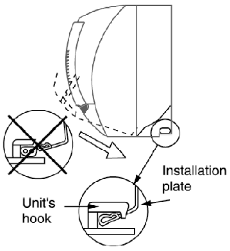
Install the Indoor Unit

Hook the indoor unit onto the upper portion of installation plate (Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving in left and right.

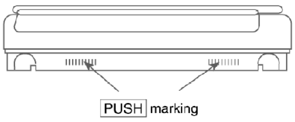

Hooks at installation plate
Sleeve for piping hole
Piping
Indoor unit
Drain hose

Secure the Indoor Unit

1. Tape the extra power supply cord in a bundle and keep it behind the chassis.
   - Ensure that the power supply cord is not clamped in between the unit's hook (2 positions) and installation plate.
2. Press the lower left and right side of the unit against the installation plate until hooks engages with their slots (sound click).


Installation plate
Unit's hook

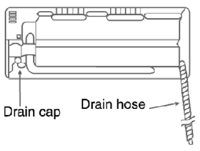
To take out the unit, push the PUSH marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.

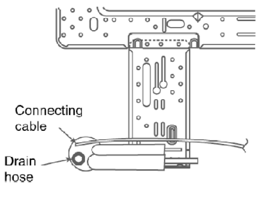

PUSH marking

(This can be used for left rear piping & left bottom piping also.)

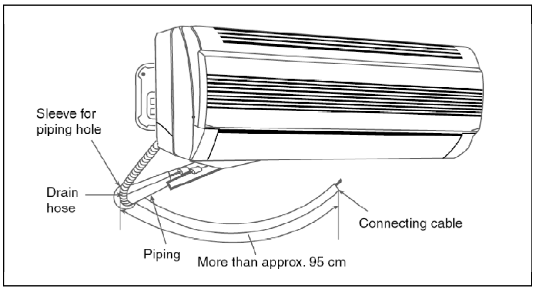
Exchange the drain hose and the cap

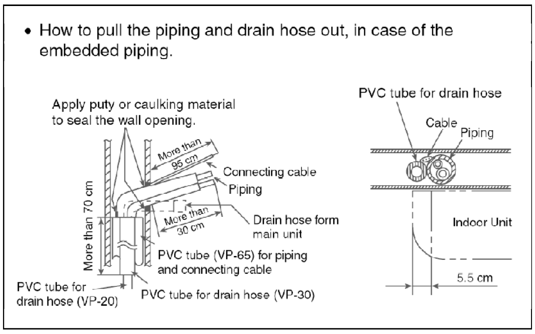
Refer view for left piping installation


Drain cap
Drain hose


Connecting cable
Drain hose

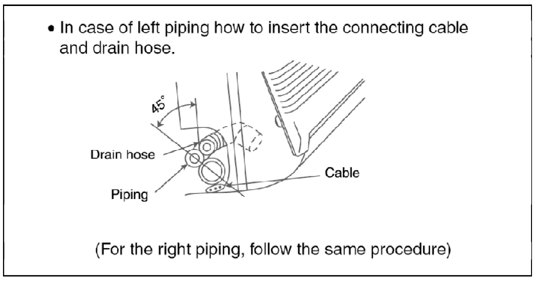
Adjust the piping slightly downwards


Sleeve for piping hole
Drain hose
Connecting cable
Piping
More than approx. 95 cm



- How to pull the piping and drain hose out, in case of the embedded piping.

Apply puty or caulking material to seal the wall opening.
More than 95 cm
Connecting cable
Piping
More than 70 cm
More than 30 cm
Drain hose form main unit
PVC tube (VP-65) for piping and connecting cable
PVC tube for drain hose (VP-20)
PVC tube for drain hose (VP-30)
PVC tube for drain hose
Cable
Piping
Indoor Unit
5.5 cm



- In case of left piping how to insert the connecting cable and drain hose.

45°
Drain hose
Piping
Cable

(For the right piping, follow the same procedure)

10.2.5. CONNECT THE CABLE TO THE INDOOR UNIT

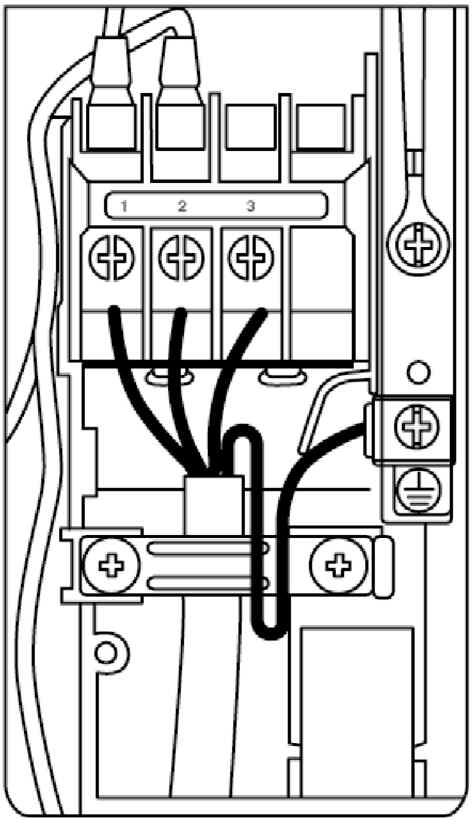
1. **The inside and outside connecting cable can be connected without removing the front grille.**
2. **Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4 (C9BKNG, C12BKNG) × 1.5 mm^2 flexible cord, type designation 245 IEC 57 or heavier cord.**

- **Ensure the color of wires of outdoor unit and the terminal Nos. are the same to the indoor's respectively.**
- **Earth lead wire shall be longer than the other lead wires as shown in the figure for the electrical safety in case of the slipping out of the cord from the anchorage. /**

C9BKNG, C12BKNG

Terminals on the indoor unit	1	2	3	⏚
Color of wires	░	▒	▓	█
Terminals on the outdoor unit	1	2	3	⏚

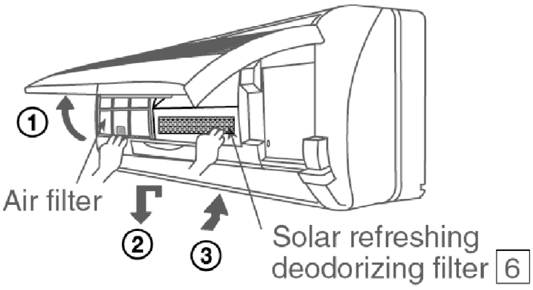
- **Secure the cable onto the control board with the holder (clamper).**



C9BKNG, C12BKNG

INSTALLATION OF AIR PURIFYING FILTERS

1. **Open the front panel.**
2. **Remove the air filters.**
3. **Put air purifying filters (left) and solar refreshing deodorizing filter (right) into place as shown in illustration below.**

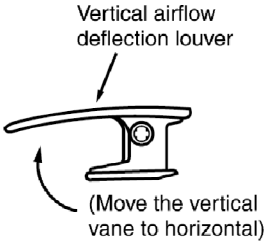

①
Air filter
②
③
Solar refreshing
deodorizing filter 6

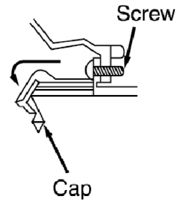
HOW TO TAKE OUT FRONT GRILLE

Please follow the steps below to take out front grille if necessary such as when servicing.

1. **Set the vertical airflow direction louver to the horizontal position.**
2. **Slide down the two caps on the front grille as shown in the illustration below, and then remove the two mounting screws.**
3. **Pull the lower section of the front grille towards you to remove the front grille.**

When reinstalling the front grille, first set the vertical airflow direction louver to the horizontal position and then carry out above steps 2 - 3 in the reverse order.


Vertical airflow deflection louver
(Move the vertical vane to horizontal)

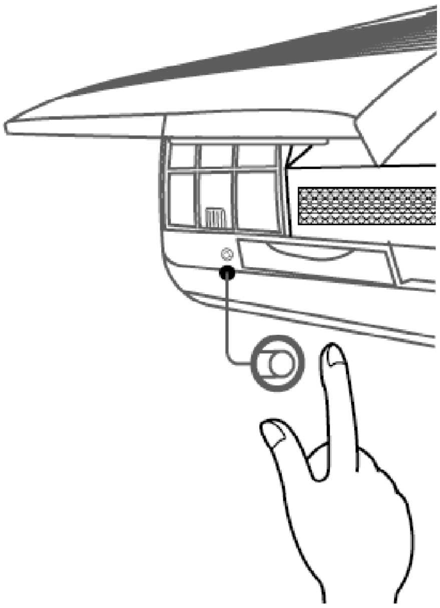


AUTO SWITCH OPERATION

The below operations will be performed by pressing the "AUTO" switch.

1. **AUTO OPERATION MODE**
   The Auto operation will be activated immediately once the Auto Switch is pressed.
2. **TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)**
   The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec. to below 10 sec.. A "pep" sound will occur at the fifth sec., in order to identify the starting of Test Run operation
3. **REMOTE CONTROLLER RECEIVING SOUND ON/OFF**

The ON/OFF of Remote Controller receiving sound can be change over by pressing the “AUTO” Switch continuously for 10 sec. and above. A “pep”, “pep” sound will occur at the tenth sec., in order to indicate the “ON/OFF” change over of remote control receiving sound.



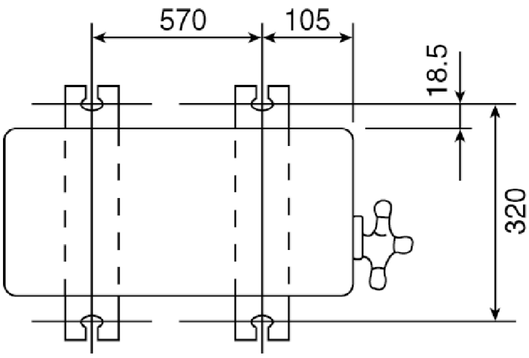
10.3. OUTDOOR UNIT

10.3.1. SELECT THE BEST LOCATION / (Refer to “Select the best location” section)

10.3.2. INSTALL THE OUTDOOR UNIT

- After selecting the best location, start installation according to Indoor/Outdoor Unit Installation Diagram.

1. Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut. (ø10 mm).
2. When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt or nails.



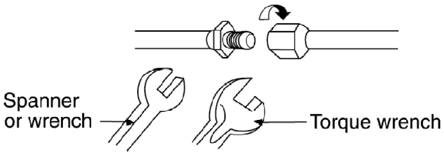
10.3.3. CONNECTING THE PIPING

Connecting The Piping To Indoor Unit

Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe. (In case of using long piping)

Connect the piping

- **Align the center of piping and sufficiently tighten the flare nut with fingers.**
- **Further tighten the flare nut with torque wrench in specified torque as stated in the table.**



MODEL	Piping size (Torque)	
	Gas	Liquid
C9BKNG	3/8" (42 N.m)	1/4" (18 N.m)
C12BKNG	1/2" (55 N.m)	1/4" (18 N.m)

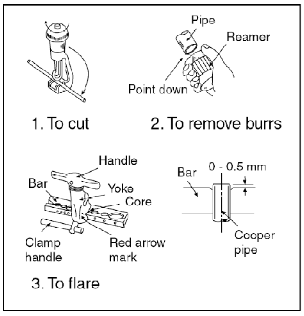
Connecting The Piping To Outdoor Unit

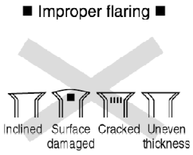
Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge. Make flare after inserting the flare nut (located at valve) onto the copper pipe.

Align center of piping to valves and then tighten with torque wrench to the specified torque as stated in the table.

CUTTING AND FLARING THE PIPING

1. **Please cut using pipe cutter and then remove the burrs.**
2. **Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused.**
   Turn the piping end down to avoid the metal powder entering the pipe.
3. **Please make flare after inserting the flare nut onto the copper pipes.**


Pipe
Reamer
Point down
1. To cut
2. To remove burrs
Handle
Bar
Yoke
Core
Clamp handle
Red arrow mark
Bar
0 - 0.5 mm
Cooper pipe
3. To flare

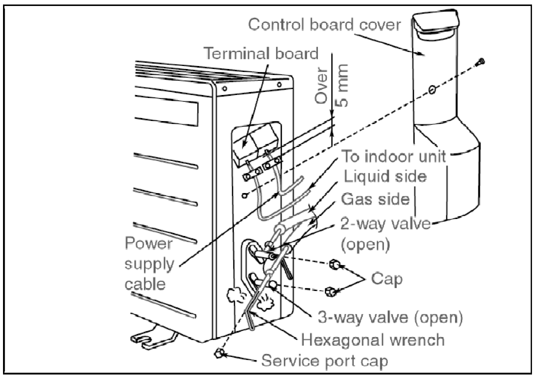

■ Improper flaring ■
Inclined
Surface damaged
Cracked
Uneven thickness

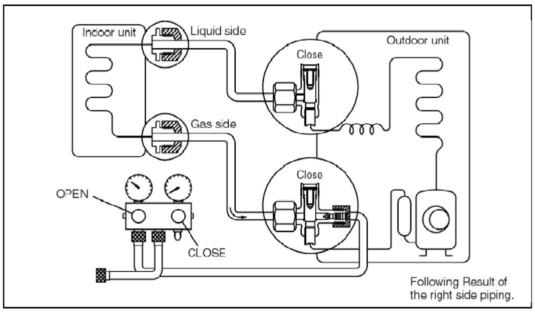
When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

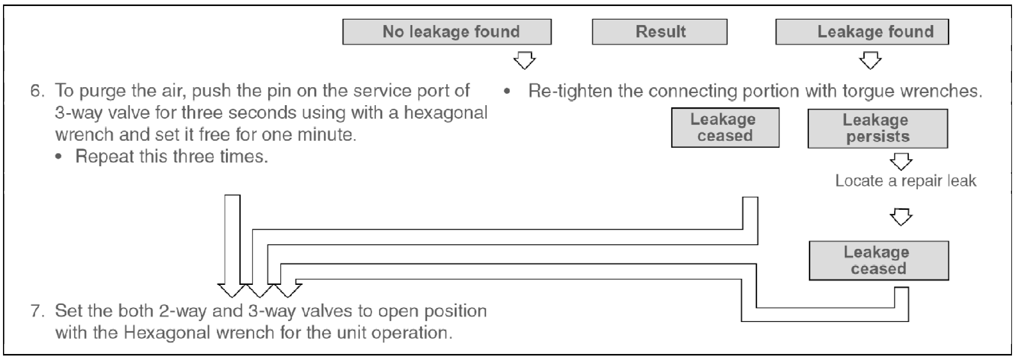
10.3.4. AIR PURGING OF THE PIPING AND INDOOR UNIT

The remaining air in the Refrigeration cycle which contains moisture may cause malfunction on the compressor.

1. **Remove the caps from the 2-way and 3-way valves.**
2. **Remove the service-port cap from the 3-way valves.**
3. **To open the valve, turn the valve stem of 2-way valve counter-clockwise approx. 90° and hold it there for ten seconds, then close it.**
4. **Check gas-leakage of the connecting portion of the pipings.**
   For the left pipings, refer to item 4(A).
5. **To open 2-way valve again, turn the valve stem counter-clockwise until it stops.**


Control board cover
Terminal board
Over 5 mm
To indoor unit
Liquid side
Gas side
2-way valve (open)
Cap
3-way valve (open)
Hexagonal wrench
Service port cap
Power supply cable


Indoor unit
Liquid side
Outdoor unit
Close
Gas side
Close
OPEN
CLOSE
Following Result of the right side piping.


No leakage found
Result
Leakage found
Leakage ceased
Leakage persists
Locate a repair leak
Leakage ceased

6. To purge the air, push the pin on the service port of 3-way valve for three seconds using with a hexagonal wrench and set it free for one minute.
   - Repeat this three times.

- Re-tighten the connecting portion with torgue wrenches.

7. Set the both 2-way and 3-way valves to open position with the Hexagonal wrench for the unit operation.

4(A). Checking gas leakage for the left piping.

(1) * Connect the manifold gauge to the service port of 3-way valve.
Measure the pressure.

*****

(2) * Keep it for 5-10 minutes.
Ensure that the pressure indicated on the
*** gauge is the same as that of measured during the first time.**

10.3.5. CONNECT THE CABLE TO THE OUTDOOR UNIT

(FOR DETAIL REFER TO WIRING DIAGRAM AT UNIT)

1. **Remove the control board cover from the unit by loosening the screw.**
2. **Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4 × 1.5 mm^2 flexible cord, type designation 245 IEC 57 or heavier cord.**

Terminals on the indoor unit	1	2	3	⏚
Color of wires	▨	▨	▨	■
Terminals on the outdoor unit	1	2	3	⏚

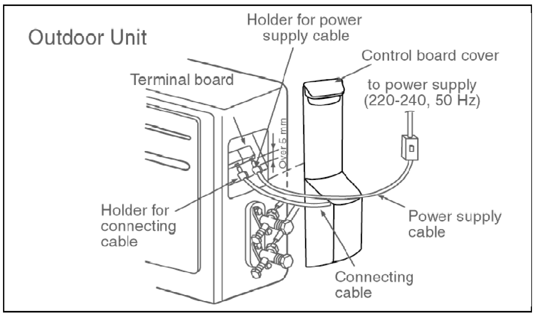
3. Secure the cable onto the control board with the holder (clamper).

4. Cable connection to the power supply (220-240 V, 50 Hz) through knife switch (Disconnecting means).

- Connect the approved polychlorophrene sheathed power supply cable (1.5 mm^2), type designation 245 IEC 57 or heavier cord to the terminal board, and connect the other end of the cable to knife switch (Disconnecting means).

Terminals on the indoor unit	L	N	⏚
Color of wires	▨	▨	■
Terminals on the outdoor unit	L	N	⏚

Note: Knife switch (Disconnecting means) should have more than 3 mm contact gap.
• Secure tha cable onto the control board with the holder (clamper)


Outdoor Unit
Holder for power supply cable
Control board cover
Terminal board
to power supply (220-240, 50 Hz)
Over 5 mm
Holder for connecting cable
Power supply cable
Connecting cable

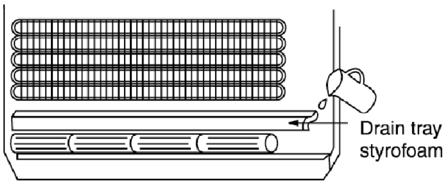
10.3.6. PIPE INSULATION

1. Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.

2. If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.

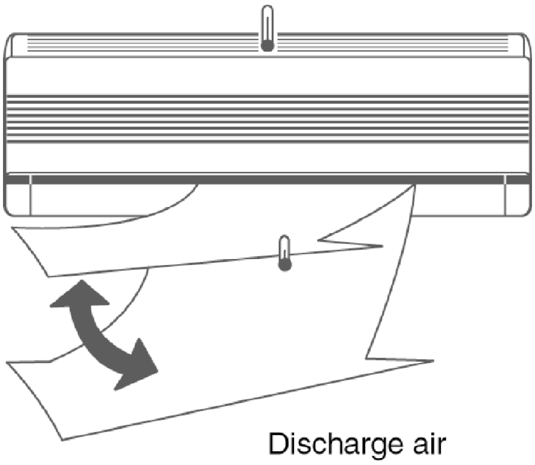
CHECK THE DRAINAGE

- Open front panel and remove air filters. / (Drainage checking can be carried out without removing the front grille.)
- Pour a glass of water into the drain tray-styrofoam.
- Ensure that water flows out from drain hose of the indoor unit.


Drain tray
styrofoam

EVALUATION OF THE PERFORMANCE

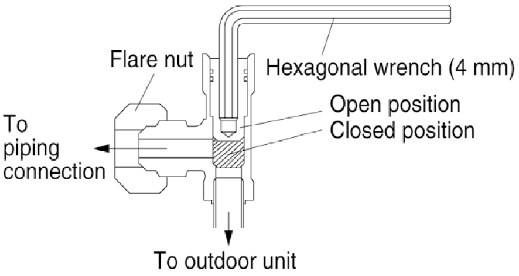
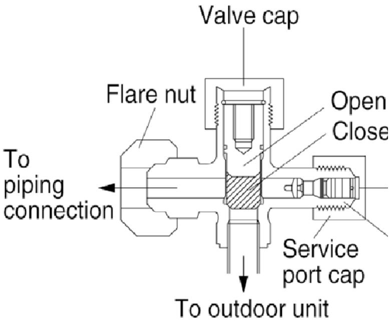
- **Operate the unit at cooling operation mode for fifteen minutes or more.**
- **Measure the temperature of the intake and discharge air.**
- **Ensure the difference between the intake temperature and the discharge is more than 8°C.**


Discharge air

CHECK ITEMS

- ☐ **Is there any gas leakage at flare nut connections?**
- ☐ **Has the heat insulation been carried out at flare nut connection?**
- ☐ **Is the connecting cable being fixed to terminal board firmly?**
- ☐ **Is the connecting cable being clamped firmly?**
- ☐ **Is the drainage OK?**
  (Refer to “Check the drainage” section)
- ☐ **Is the earth wire connection properly done?**
- ☐ **Is the indoor unit properly hooked to the installation plate?**
- ☐ **Is the power supply voltage complied with rated value?**
- ☐ **Is there any abnormal sound?**
- ☐ **Is the cooling operation normal?**
- ☐ **Is the thermostat operation normal?**
- ☐ **Is the remote control’s LCD operation normal?**
- ☐ **Is the air purifying filter installed?**

11. 2-way, 3-way Valve

	2-way Valve (Liquid Side)	3-way Valve (Gas Sid	
	 Flare nut Hexagonal wrench (4 mm) Open position Closed position To piping connection To outdoor unit	 Valve cap Flare nut Open Close To piping connection Service port cap To outdoor unit	
Works	**Shaft Position**	**Shaft Position**	**Servic**
Shipping	**Close (With valve cap)**	**Close (With valve cap)**	**Cl (With**
Evacuation (Installation and Re-installation)	**Close (Counter-Clockwise)**	**Close (Clockwise)**	**Op (Pus**
Operation	**Open (With valve cap)**	**Open (With valve cap)**	**Cl (With**
Pumping down (Transferring)	**Close (Clockwise)**	**Open (Counter-Clockwise)**	**Op (Conn manifol**
Evacuation (Servicing)	**Open**	**Open**	**Op With vacu**
Gas charging (Servicing)	**Open**	**Open**	**Op (With c cyli**
Pressure check (Servicing)	**Open**	**Open**	**Op (Conn manifol**

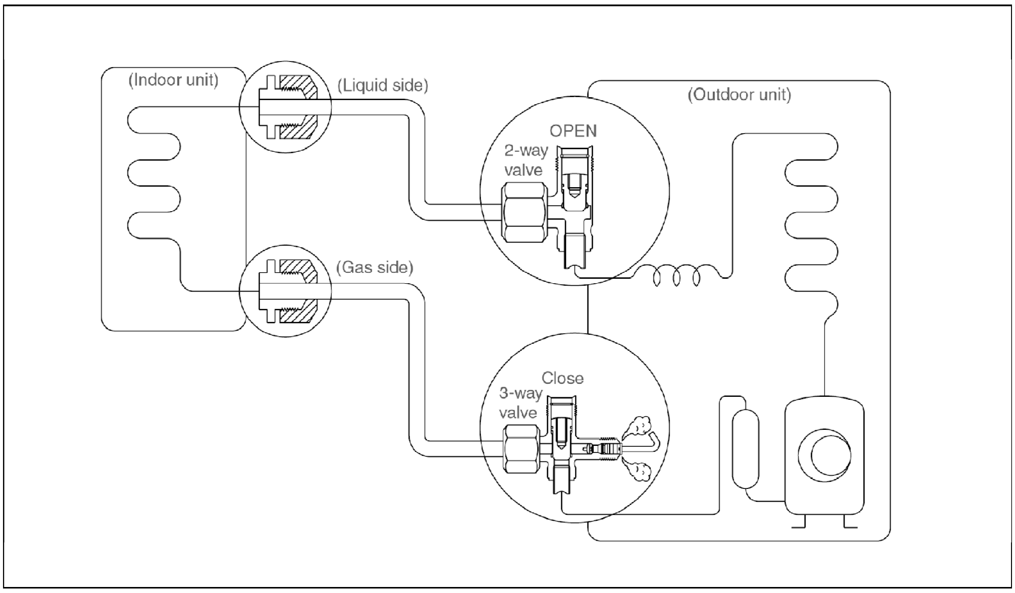
	2-way Valve (Liquid Side)	3-way Valve (Gas Sid	
Gas releasing (Servicing)	Open	Open	Op (Conn manifol

11.1. Air Purging of the Piping and Indoor Unit

11.1.1. Air purging (Installation)

Required tools: hexagonal wrench, adjustable wrench, torque wrenches, wrench to hold the joints and gas leak detector. / The additional gas for air purging has been charged in the outdoor unit. / However, if the flare connections have not been done correctly and there gas leaks, a gas cylinder and the charge set will be needed.

The air in the indoor unit and in the piping must be purged. If air remains in the refrigeration pipings, it will affect the compressor, reduce the cooling capacity, and could lead to a malfunction.



Service port cap / Be sure, using a torque wrench to tighten the service port cap (after using the service port), so that it prevents the gas leakage from the refrigeration cycle.

Procedure:

1. **Recheck the piping connections.**
2. **Open the valve stem of the 2-way valve counter-clockwise approximately 90°, wait 10 seconds, and then set it to closed position.**

   - Be sure to use a hexagonal wrench to operate the valve stem.

3. Check for gas leakage.

- **Check the flare connection for gas leakage.**

4. Purge the air from the system

- **Set the 2-way valve to the open position and remove the cap from the 3-way valve's service port.**
- **Using the hexagonal wrench to press the valve core pin, discharge for three seconds and then wait for one minute. / Repeat this three times.**

5. Use torque wrench to tighten the service port cap to a torque of 1.8 kg.m. (18 N.m).

6. Set the 3-way valve to the opened position.

7. Mount the valve stem nuts to the 2-way and 3-way valves.

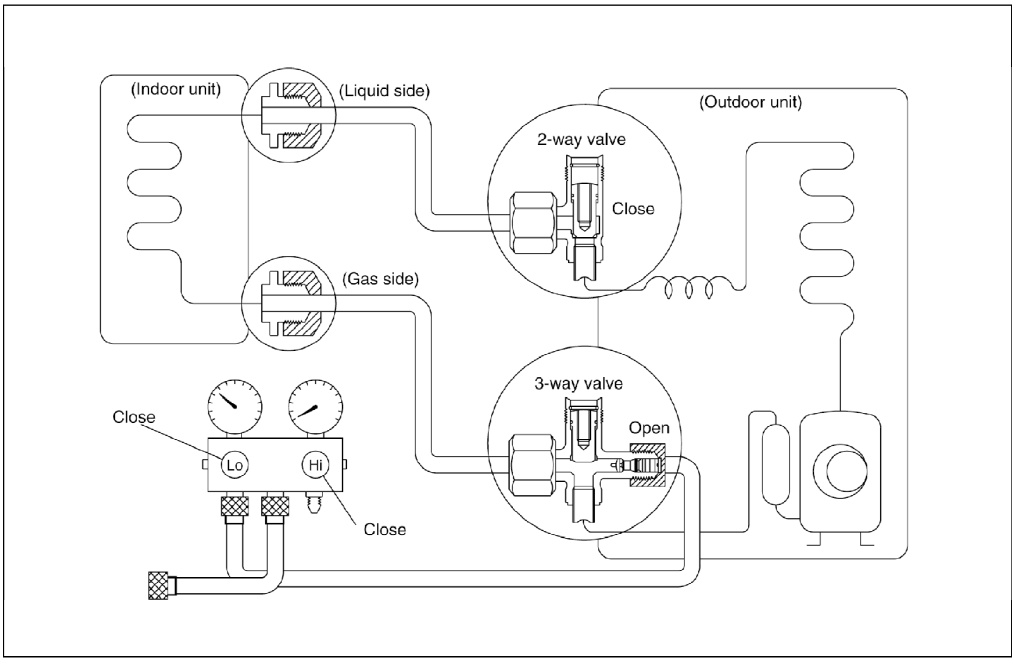
8. Check for gas leakage.

- **At this time, especially check for gas leakage from the 2-way and 3-way's stem nuts, and from the service port cap.**

Caution

If gas leakage is discovered in step (3) above, take the following measures:
If the leaks stop when the piping connections are tightened further, continue working from step (4).
If the gas leaks do not stop when the connections are retightened, repair the location of the leak, discharge all of the gas through the service port, and then recharge with the specified amount of gas from a gas cylinder.

11.1.2. Pumping down (Re-installation)


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Close
(Gas side)
3-way valve
Close
Open
Lo
Hi
Close

Procedure:

1. Confirm that both the 2-way and 3-way valves are set to the opened position.
   - Remove the valve stem caps and confirm that the valve stems are in the opened position.
   - Be sure to use a hexagonal wrench to operate the valve stems.
2. Operate the unit for 10 to 15 minutes.
3. Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.
   - Connect the charge hose with the push pin to the Gas service port.
4. Air purging of the charge hose.
   - Open the low-pressure valve on the charge set slightly to purge air from the charge hose.
5. Set the 2-way valve to the close position.
6. Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 1 kg/cm$_2$G (0.1 MPa).

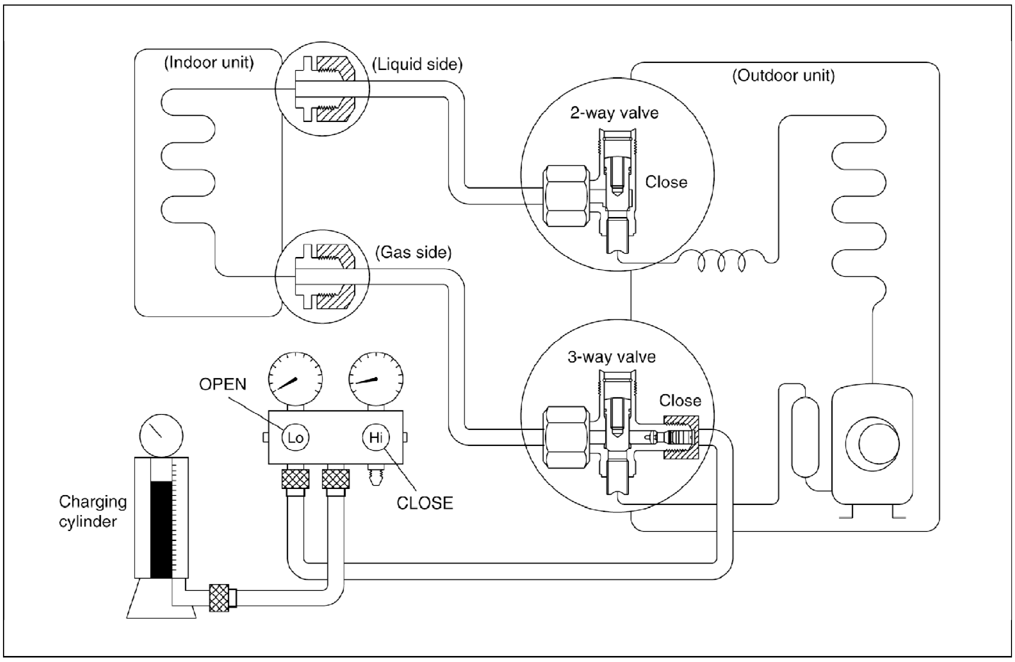
7. Immediately set the 3-way valve to the closed position.

- Do this quickly so that the gauge ends up indicating 3 to 5 kg/ cm^2G (0.3 to 0.5 MPa).

8. Disconnect the charge set, and mount the 2-way and 3-way valve’s stem nuts and the service port caps.

- Use a torque wrench to tighten the service port cap to a torque of 1.8 kg.m (18 N.m).
- Be sure to check for gas leakage.

11.1.3. Re-air purging (Re-installation)


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Close
(Gas side)
3-way valve
Close
OPEN
Lo
Hi
CLOSE
Charging cylinder

Procedure:

1. Confirm that both the 2-way and 3-way valves are set to the closed position.
2. Connect the charge set and a charging cylinder to the service port of the 3-way valve.

- Leave the valve on the charging cylinder closed.

3. Air purging.

- Open the valves on the charging cylinder and the charge set.

Purge the air by loosening the flare nut on the 2-way valve approximately 45° for 3 seconds then closing it for 1 minute; repeat 3 times.

- After purging the air, use a torque wrench to tighten the flare nut on the 2-way valve.

4. Check for gas leakage.

   - Check the flare connections for gas leakage.

5. Discharge the refrigerant.

   - Close the valve on the charging cylinder and discharge the refrigerant until the gauge indicates 3 to 5 kg/cm$_2$G (0.3 to 0.5 MPa)

6. Disconnect the charge set and the charging cylinder, and set the 2-way and 3-way valves to the open position.

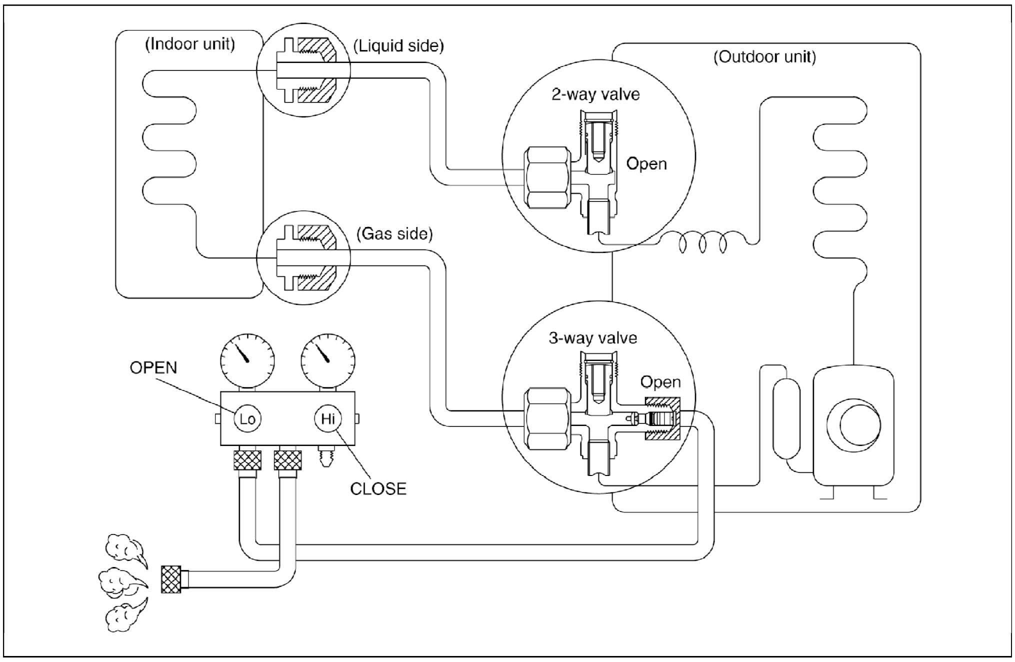
   - Be sure to use a hexagonal wrench to operate the valve stems.

7. Mount the valve stem nuts and the service port cap.

   - Be sure to use a torque wrench to tighten the service port cap to a torque 1.8 kg.m (18 N.m).
   - Be sure to check for gas leakage.

11.1.4. Balance refrigerant of the 2-way, 3-way valves

(Gas leakage)

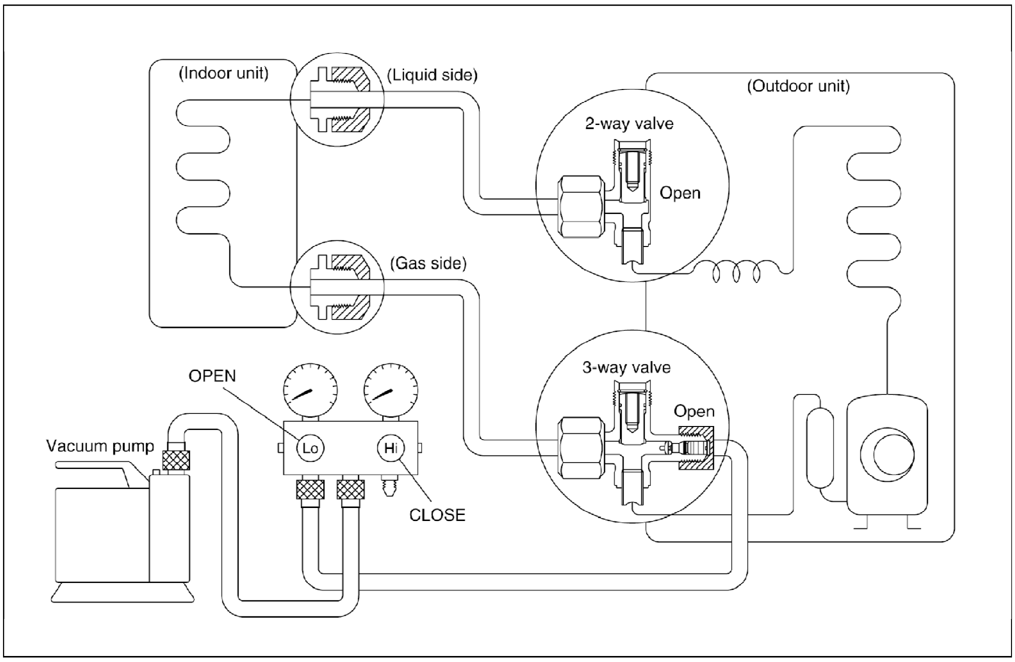

(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Open
(Gas side)
3-way valve
Open
OPEN
Lo
Hi
CLOSE

Procedure:

1. Confirm that both the 2-way and 3-way valves are set to the open position.
2. Connect the charge set to the 3-way valve's service port.
   - Leave the valve on the charge set closed.
   - Connect the charge hose with the push pin to the service port.
3. Open the valves (Low side) on the charge set and discharge the refrigerant until the gauge indicates 0.5 to 1 kg/cm$_2$G (0.05 to 0.1 MPa) .
   - If there is no air in the refrigeration cycle [the pressure when the air conditioner is not running is higher than 1 kg/cm$_2$G (0.1 MPa)], discharge the refrigerant until the gauge indicates 0.5 to 1 kg/cm$_2$G (0.05 to 0.1 MPa). If this is the case, it will not be necessary to apply a evacuation.
   - Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will be discharged.

11.1.5. Evacuation (Installation)

(No refrigerant in the refrigeration cycle)


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Open
(Gas side)
3-way valve
Open
OPEN
Vacuum pump
Lo
Hi
CLOSE

Procedure:

1. **Connect the vacuum pump to the charge set's centre hose.**
2. **Evacuation for approximately one hour.**

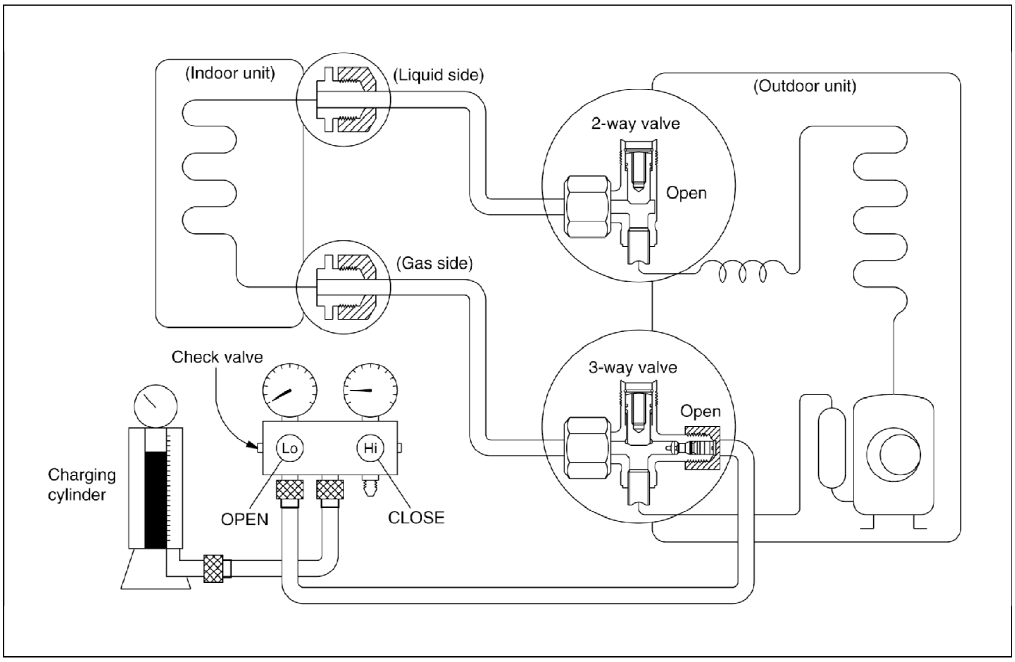
   - Confirm that the gauge needle has moved toward -0.1 MPa (-76 cmHg) [vacuum of 4 mmHg or less.]

3. **Close the valve (Low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).**
4. **Disconnect the charge hose from the vacuum pump.**

   - Vacuum pump oil
   If the vacuum pump oil becomes dirty or depleted, replenish as needed.

11.1.6. Gas charging

(After Evacuation)


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Open
(Gas side)
Check valve
3-way valve
Open
Charging
cylinder
Lo
Hi
OPEN
CLOSE

Procedure:

1. **Connect the charge hose to the charging cylinder.**
   - **Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.**
2. **Purge the air from the charge hose.**
   - **Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).**
3. **Open the valve (Low side) on the charge set and charge the system with liquid refrigerant.**
   - **If the system cannot be charged with the specified amount of refrigerant, it can be charged with a little at a time (approximately 150 g each time) while operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure. (pumping down-pin)**

This is different from previous procedures. Because you are charging with liquid refrigerant from the gas side, absolutely do no attempt to charge with large amount of liquid refrigerant while operating the air conditioner.

4. Immediately disconnect the charge hose from the 3-way valve’s service port.
   - Stopping partway will allow the refrigerant to be discharged.
   - If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.
5. Mount the valve stem caps and the service port cap.
   - Use torque wrench to tighten the service port cap to a torque of 18 N.m.
   - Be sure to check for gas leakage.

12. Servicing Information

12.1. Indoor Electronic Controllers Removal Procedures

1. The Electronic Controller, a Signal Receiver and an Indicator (Fig. 3) can be seen by the below steps:
   - Remove the 2 caps and 2 screws at the bottom of the Front Grille. (Fig. 1)
   - Remove the Front Grille by releasing the 2 hooks at the top of the Front Grille. (Fig. 1)
   - Remove the Control Board Cover by releasing the 2 tabs at left, 1 tab on top and 1 tab at right side of the Control Board Cover. (Fig. 2)
2. To remove the Electronic Controller:
   - Release the Particular Piece. (Fig. 3)
   - Release the hook that hold the Electronic Controller. (Fig. 3)

12.2. Indoor Fan Motor and Cross Flow Fan Removal Procedures

- Remove the Control Board by:-

- Releasing CN-REC/DISP connectors. (Fig. 4)

- Releasing CN-FM connectors. (Fig. 4)

- Releasing CN-STM connector. (Fig. 4)

- Removing the Earth Wire screw. (Fig. 4)

- Releasing the Intake Air Sensor. (Fig. 4)

- Releasing the Piping Sensor. (Fig. 4)

Fig. 1

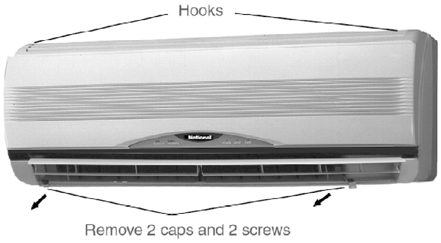

Hooks
Remove 2 caps and 2 screws

Fig. 2

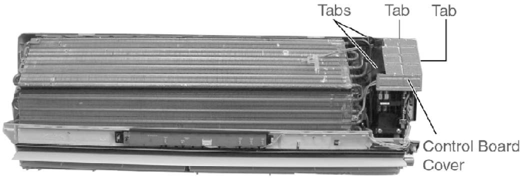

Tabs
Tab
Tab
Control Board
Cover

Fig. 3

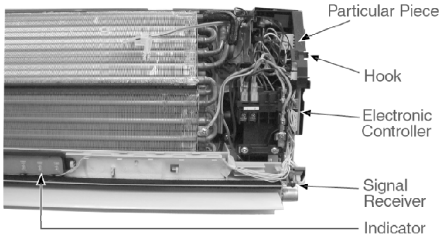
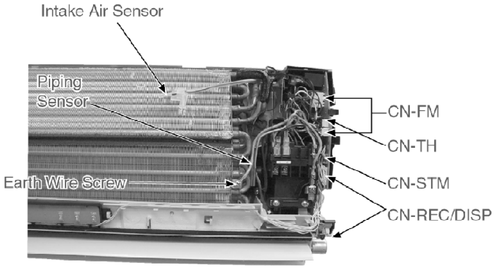

Particular Piece
Hook
Electronic
Controller
Signal
Receiver
Indicator

Fig. 4


Intake Air Sensor
Piping Sensor
Earth Wire Screw
CN-FM
CN-TH
CN-STM
CN-REC/DISP

- **Pulling out the Drain Hose from outlet to remove the Discharge Grille. (Fig. 5)**
- **Removing the right and left screws. (Fig. 5)**
- **Then remove the Control Board by pressing down the hook at the left and pushing up the right hook. (Fig. 5)**
- **Release the Fan Motor leadwire by pressing the hook at the center of the connector. (Fig. 6)**
- **Remove the screw at the Cross Flow Fan. (Fig. 7)**
- **REMINDER - To reinstall the Fan Motor, adjust the connector of the Fan Motor as shown in the Fig. 7.**

Fig. 5

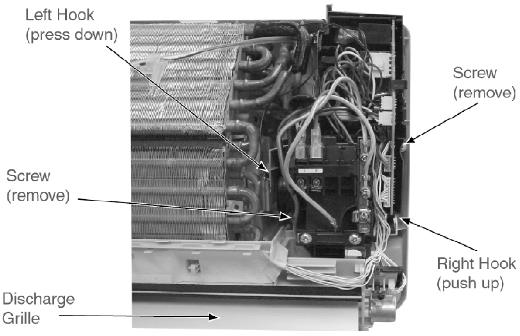

Left Hook (press down)
Screw (remove)
Screw (remove)
Right Hook (push up)
Discharge Grille

Fig. 6

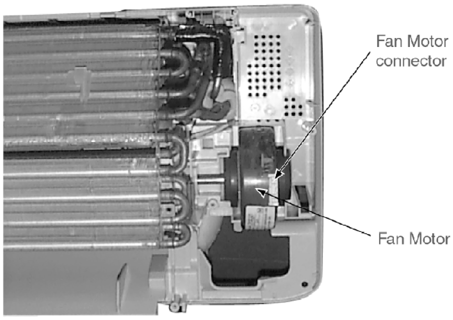
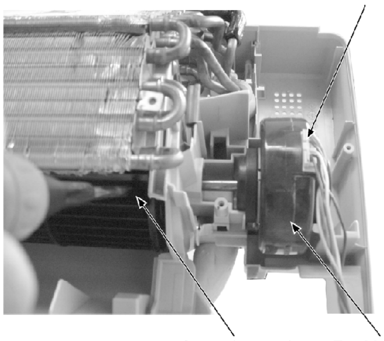

Fan Motor connector
Fan Motor

Fig. 7


Screw (remove)
Fan Motor

To reinstall the Fan Motor, please adjust the connector location is positioned 45° with Fan Motor before fixing Control Board Complete.

- **Remove the screws at the left of the Evaporator. (Fig. 8)**
- **Remove the Bearing. (Fig. 9)**
- **Push up the Evaporator and pull out the Cross Flow Fan from shaft. By then, Fan Motor can be taken out. (Fig. 9)**

Fig. 8

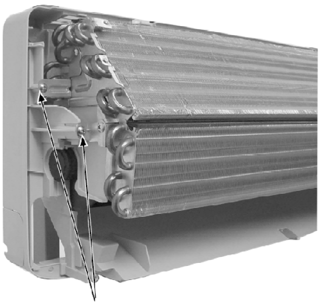
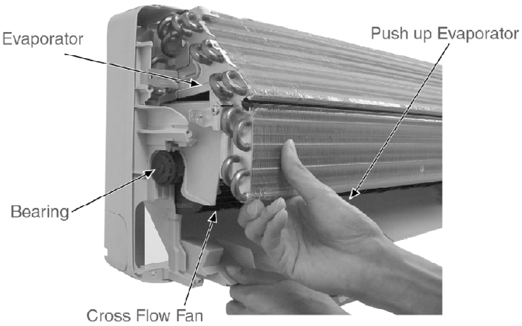


Fig. 9


Evaporator
Push up Evaporator
Bearing
Cross Flow Fan

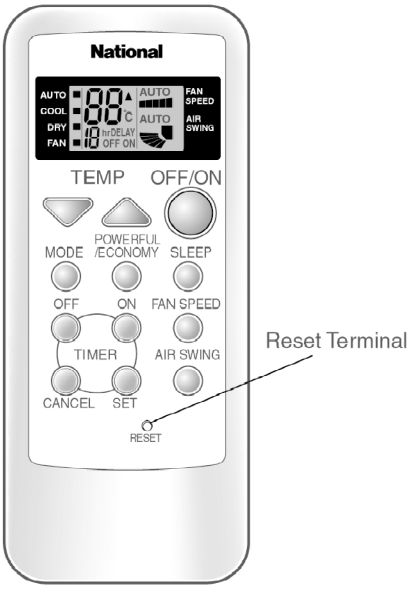
- **Remote Control Reset**

  When the batteries are inserted for the first time, or the batteries are replaced, all the indications will blink and the remote control might not work.

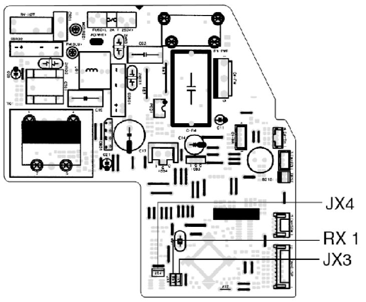
  If this happen, you will find a resetting terminal, and by shorting it with a minus screwdriver, it will return to normal.

- Changing the wireless remote control transmission code

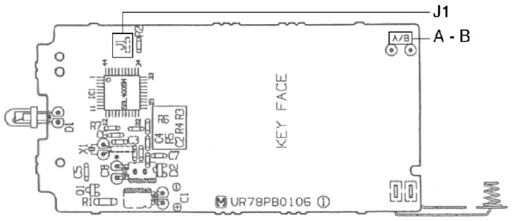
When two indoor units are installed in the same room, in order to prevent operating errors caused by using two remote controls, cut a jumper wire at the remote control printed circuit board (A - B) and cut a jumper wire at the indoor printed circuit board (JX4). It is possible to select from 4 types of transmission codes including one at time of delivery condition (0).


National
AUTO
COOL
DRY
FAN
AUTO
FAN SPEED
AUTO
AIR SWING
hr DELAY
OFF ON
TEMP
OFF/ON
MODE
POWERFUL /ECONOMY
SLEEP
OFF
ON
FAN SPEED
TIMER
AIR SWING
CANCEL
SET
RESET
Reset Terminal

Indoor printed circuit board



Remote control printed circuit board


J1
A - B
KEY FACE
UR78PB0106

	Remote control printed circuit board		Indoor printed circuit board			Note
	A - B	J1	JX3	JX4	RX 1	
0	SHORT	OPEN	SHORT	SHORT	——	At product delivery
1	OPEN	OPEN	SHORT	OPEN	——	
2	SHORT	SHORT	OPEN	OPEN	10 KΩ	
3	OPEN	SHORT	SHORT	OPEN	10 KΩ	

13. Troubleshooting Guide

13.1. Refrigeration cycle system

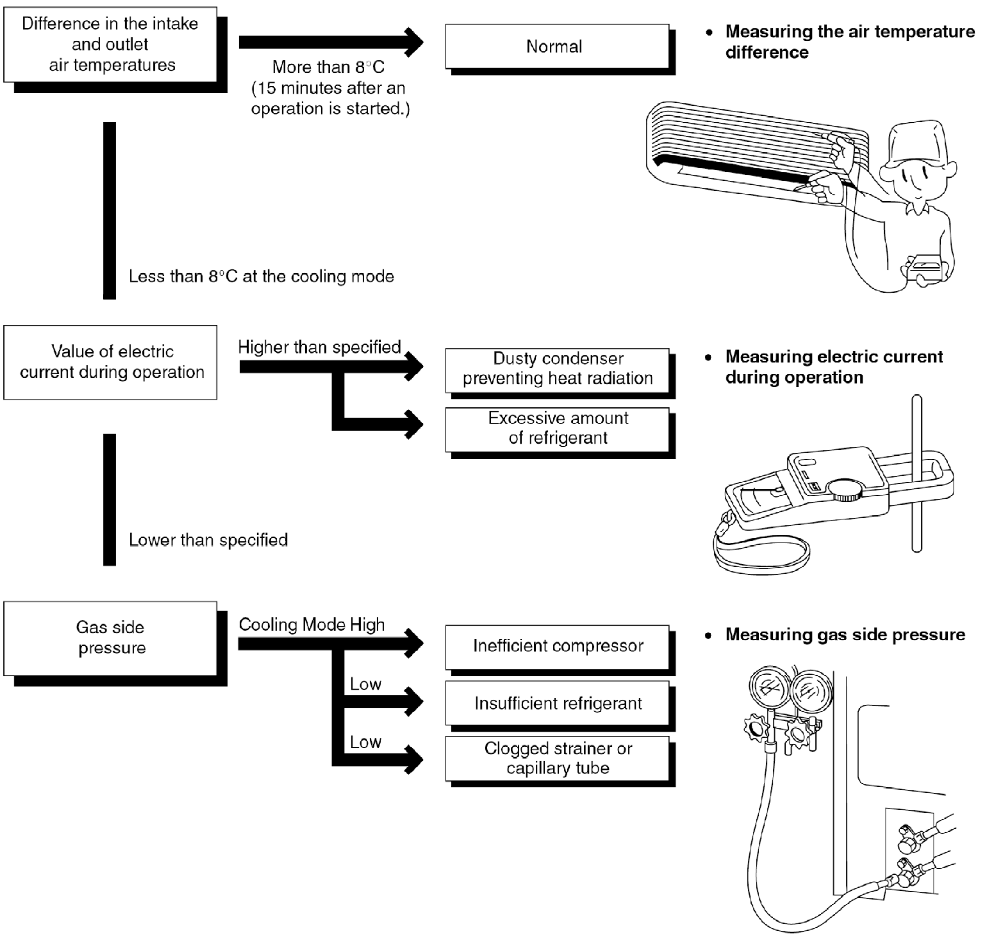
In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with

the power source, malfunction of a compressor and a fan.
The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table on the right.

Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure Mpa (kg/cm²G)	Outlet air temperature (°C)
Cooling Mode	0.4 ~ 0.6 (4 ~ 6)	12 ~ 16

* Condition: Indoor fan speed; High
Outdoor temperature: 35°C


Difference in the intake and outlet air temperatures
More than 8°C
(15 minutes after an operation is started.)
Normal
• Measuring the air temperature difference
Less than 8°C at the cooling mode
Value of electric current during operation
Higher than specified
Dusty condenser preventing heat radiation
Excessive amount of refrigerant
• Measuring electric current during operation
Lower than specified
Gas side pressure
Cooling Mode High
Inefficient compressor
Low
Insufficient refrigerant
Low
Clogged strainer or capillary tube
• Measuring gas side pressure

13.1.1. Relationship between the condition of the air conditioner and pressure and electric current

Condition of the air conditoner	Cooling Mode		
	Low Pressure	High Pressure	Electric current operatio
Insufficient refrigerant (gas leakage)	↘	↘	↘
Clogged capillary tube or Strainer	↘	↘	↘
Short circuit in the indoor unit	↘	↘	↘
Heat radiation deficiency of the outdoor unit	↗	↗	↗
Inefficient compression	↗	↘	↘

- Carry out the measurements of pressure, electric current, and temperature fifteen minutes after an operation is started.

13.1.2. Diagnosis methods of a malfunction of a compressor

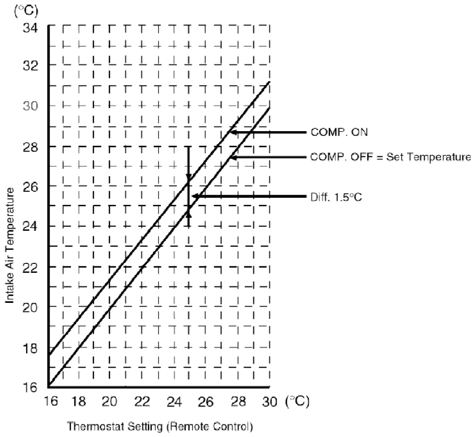
Nature of fault	Symptom
Insufficient compressing of a compressor	-Electric current during operation becomes approximately 20% lower than the normal va -The discharge tube of the compressor becomes abnormally hot (normally 70 to 90°C). -The difference between high pressure and low pressure becomes almost zero.
Locked compressor	-Electric current reaches a high level abnormally, and the value exceeds the limit of an a some cases, a breaker turns off. -The compressor has a humming sound.

14. Technical Data

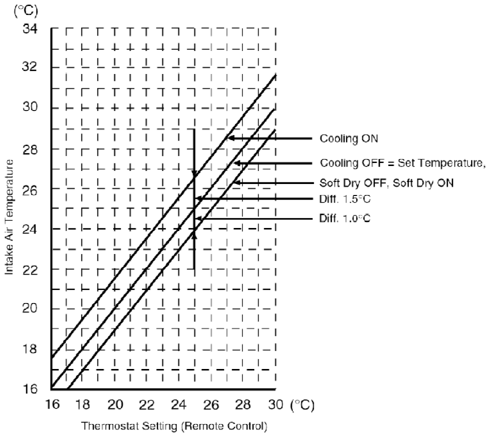
■ Thermostat characteristics

CS-C9BKNG / CS-C12BKNG

- **Cooling**

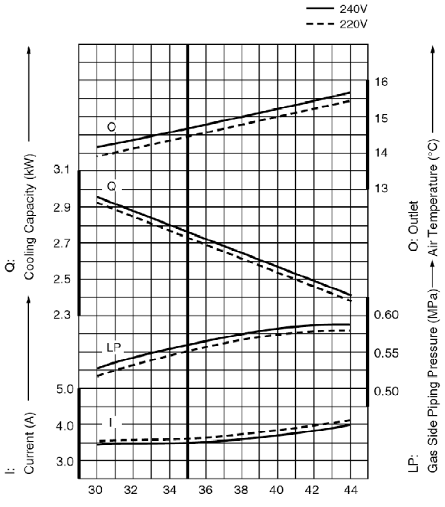


- **Soft Dry**



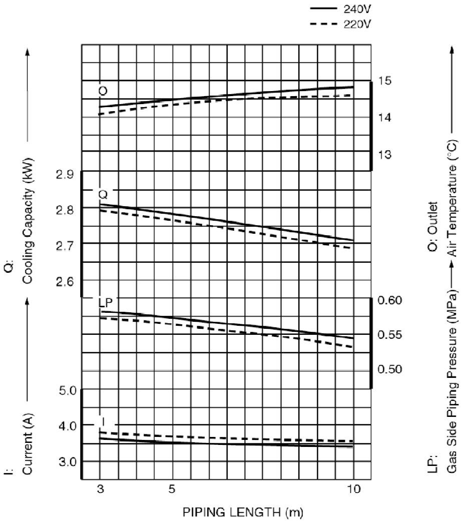
CS-C9BKNG / CU-C9BKN5G

- **Cooling Characteristic**



[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 7.5 m

- **Piping Length Characteristic**

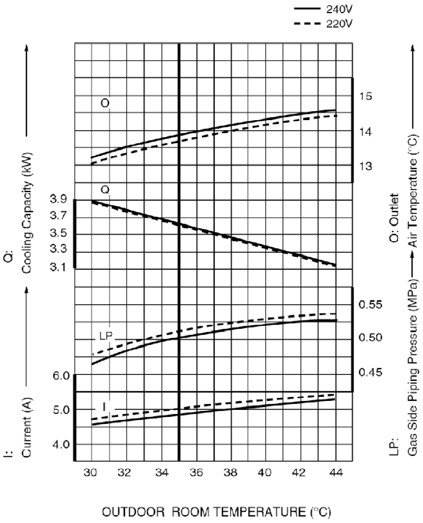


[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling opeartion: At High fan

■ Operation characteristics

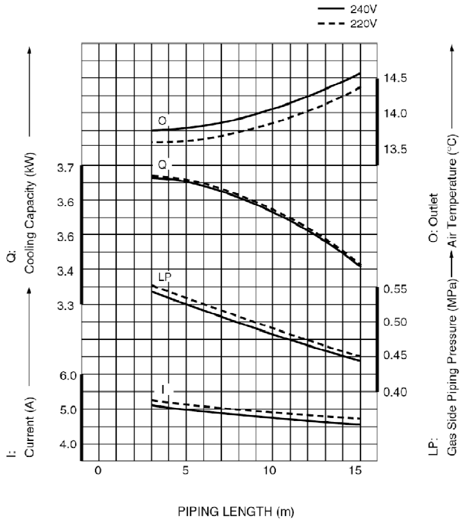
CS-C12BKNG / CU-C12BKN5G

- **Cooling Characteristic**



[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 7.5 m

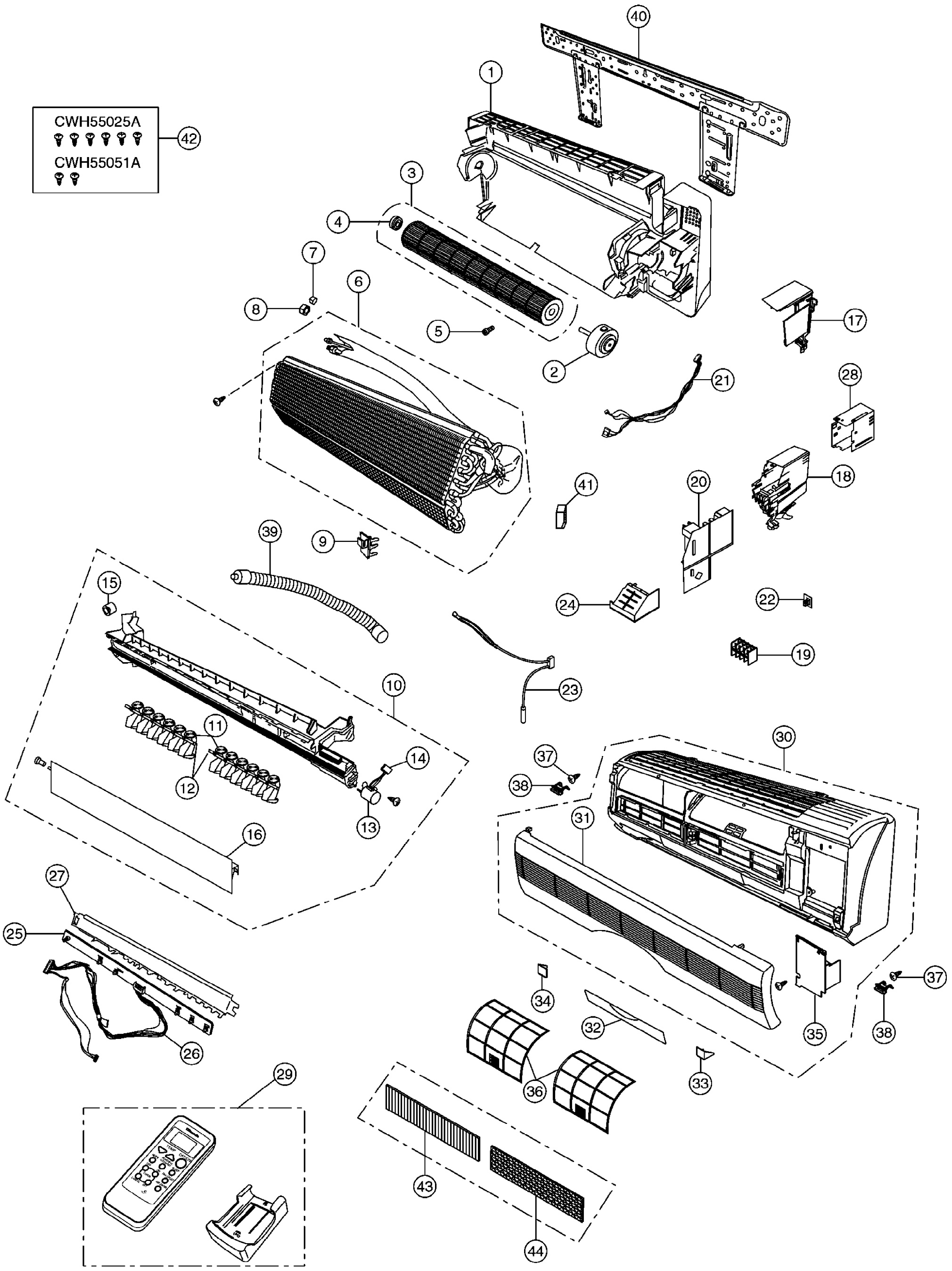
- **Piping Length Characteristic**



[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling opeartion: At High fan

15. Exploded View

CS-C9BKNG / CS-C12BKNG


40
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CWH55025A
CWH55051A
42
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44

Note:

The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

16. Replacement Parts List

<Model: CS-C9BKNG / CS-C12BKNG>

REF. NO.	PART NAME & DESCRIPTION	QTY.	CS-C9BKNG	CS-C12BKNG	REM
1	CHASSY COMPLETE	1	CWD50C1177	←	
2	FAN MOTOR	1	CWA921060	←	(
3	CROSS FLOW FAN COMPLETE	1	CWH02C1012	←	
4	BEARING ASS’Y	1	CWH64K007	←	
5	SCREW - CROSS FLOW FAN	1	CWH4580304	←	
6	EVAPORATOR	1	CWB30C1143	CWB30C1124	
7	FLARE NUT	1	CWH6002140(1/4”)	←	
8	FLARE NUT	1	CWT25005 (3/8”)	CWT25007 (1/2”)	
9	INTAKE AIR SENSOR HOLDER	1	CWH32142	←	
10	DISCHARGE GRILLE COMPLETE	1	CWE20C2101	←	
11	VERTICAL VANE	12	CWE241068	←	
12	CONNECTING BAR	2	CWE261024	←	
13	AIR SWING MOTOR	1	CWA98260	←	(
14	LEAD WIRE - AIR SWING MOTOR	1	CWA67C3977	←	
15	CAP - DRAIN TRAY	1	CWH52C1001	←	
16	HORIZONTAL VANE	1	CWE241070	←	
17	PARTICULAR PIECE	1	CWD932162	←	
18	CONTROL BOARD	1	CWH102103	←	
19	TERMINAL BOARD COMPLETE	1	CWA28C2082	←	(
20	ELECTRONIC CONTROLLER - MAIN	1	CWA742777	CWA742684	(
21	LEAD WIRE - FAN MOTOR	1	CWA67C3729	←	
22	ELECTRONIC CONTROLLER - RECEIVER	1	CWA73C1124	←	(
23	SENSOR COMPLETE	1	CWA50C608	←	(
24	CONTROL BOARD FRONT COVER	1	CWH131090	←	
25	ELECTRONIC CONTROLLER - INDICATOR	1	CWE39C1042	←	(
26	LEAD WIRE - INDICATOR	1	CWA67C3637	←	
27	INDICATOR HOLDER	1	CWD932163	←	
28	CONTROL BOARD TOP COVER	1	CWH131091	←	
29	REMOTE CONTROL COMPLETE	1	CWA75C2160	←	(
30	FRONT GRILLE COMPLETE	1	CWE11C2329	←	
31	INTAKE GRILLE	1	CWE221036	←	
32	CONTROL PANEL	1	CWE312115	←	
33	DECORATION BASE (R)	1	CWE351067	←	
34	DECORATION BASE (L)	1	CWE351068	←	
35	GRILLE DOOR	1	CWE141033	←	
36	AIR FILTER	2	CWD001047	←	
37	SCREW - FRONT GRILLE	2	XTN4+16C	←	
38	CAP - FRONT GRILLE	2	CWH521062	←	
39	DRAIN HOSE	1	CWH85287	←	
40	INSTALLATION PLATE	1	CWH36K1006	←	
41	ANTI-VIBRATION BUSHING	1	-	CWH501023	
42	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C067	←	
43	AIR PURIFYING FILTER	1	CWMD00C0001	←	(
44	SOLAR DEODORIZING FILTER	1	CWMD00C0002	←	(

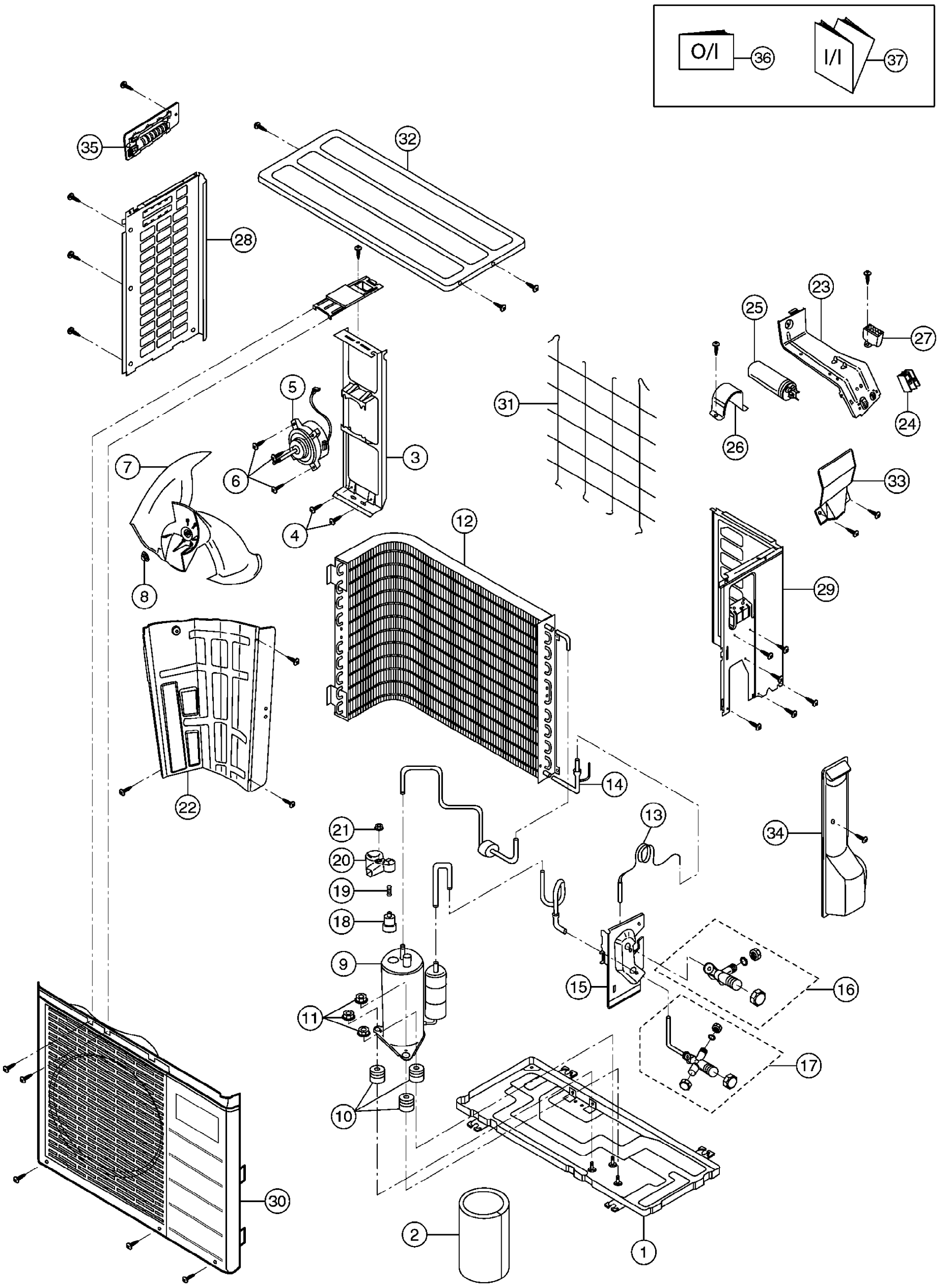
(Note)

- All parts are supplied from MACC, Malaysia (Vendor Code: 086).

- “O” marked parts are recommended to be kept in stock.

17. Exploded View

CU-C9BKN5G / CU-C12BKN5G


O/I
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I/I
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1

Note:

The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

18. Replacement Parts List

<Model: CU-C9BKN5G / CU-C12BKN5G>

REF. NO.	PART NAME & DESCRIPTION	QTY.	CU-C9BKN5G	CU-C12BKN5G	REMARKS
1	CHASSY ASS'Y	1	CWD50K2053A	CWD50K2052A	
2	SOUND PROOF MATERIAL	1	CWG302110	←	
3	FAN MOTOR BRACKET	1	CWD541030	←	
4	SCREW - FAN MOTOR BRACKET	2	CWH55413	←	
5	FAN MOTOR	1	CWA951088	CWA951120	0
6	SCREW - FAN MOTOR MOUNT	3	CWH55406	←	
7	PROPELLER FAN ASS'Y	1	CWH03K1006	←	
8	NUT - PROPELLER FAN	1	CWH56053	←	
9	COMPRESSOR	1	2PS146D3AA04	QJ222PBA	0
10	ANTI - VIBRATION BUSHING	3	CWH50077	CWH501024	
11	NUT - COMPRESSOR MOUNT	3	CWH56000	CWH4582065	
12	CONDENSER	1	CWB32C1141	CWB32C1152	
13	TUBE ASS'Y (CAPILLARY TUBE)	1	CWB15K1031	CWB15K1060	
14	STRAINER	1	CWB11025	CWB111011	
15	HOLDER COUPLING ASS'Y	1	CWH351015	←	
16	2-WAY VALVE (LIQUID)	1	CWB021056	←	0
17	3-WAY VALVE (GAS)	1	CWB011061	CWB011060	0
18	OVERLOAD PROTECTOR	1	CWA12344	CWA121084	0
19	HOLDER - O.L.P.	1	CWH7041200	-	
20	TERMINAL COVER	1	CWH171011	CWH171021	
21	NUT - TERMINAL COVER	1	CWH7080300	CWH561020	
22	SOUND PROOF BOARD	1	CWH151022	CWH151023	
23	CONTROL BOARD	1	CWH102102	←	
24	TERMINAL BOARD ASS'Y	1	CWA28K217	←	
25	CAPACITOR - COMPRESSOR	1	DS371306CPNA (30 μF, 370VAC)	←	0
26	HOLDER CAPACITOR	1	CWH30057	←	
27	CAPACITOR - FAN MOTOR	1	CWA31618 (2.0 μF, 450VAC)	←	0
28	CABINET SIDE PLATE (L)	1	CWE041031A	←	
29	CABINET SIDE PLATE (R)	1	CWE041032A	CWE041033A	
30	CABINET FRONT PLATE	1	CWE06K1034	←	
31	WIRE NET	1	CWD041021A	←	
32	CABINET TOP PLATE	1	CWE031014A	←	
33	PLATE - C. B. COVER	1	CWH131088	←	
34	CONTROL BOARD COVER	1	CWH131092	←	
35	HANDLE	1	CWE161010	←	
36	OPERATION INSTRUCTIONS	1	CWF563449	←	
37	INSTALLATION INSTRUCTIONS	1	CWF612251	←	

(Note)

- All parts are supplied from MACC, Malaysia (Vendor Code: 086).

- “O” marked parts are recommended to be kept in stock.

19. Electronic Parts List

<Electronic Controller Part No.: CWA742777 & CWA742684>

SYMBOL	DESCRIPTION & NAME	PART NO.
BZ101	SOUND GENERATOR	A48040
C-FM	SH CAPACITOR	A31698
D08, D10, D11	DIODE	B0ACCK000005 (CWA742777 only
DB01	DIODE	A54CS1VB20E
FUSE	FUSE	XBA2C20TR0
FUSE HOLDER	FUSE HOLDER	XCSCW012
IC01	INTEGRATED CIRCUIT	A52D0022GB34
IC02	INTEGRATED CIRCUIT	C3EBDG000021
IC03	INTEGRATED CIRCUIT	A52C040
IC04	INTEGRATED CIRCUIT	A52C114
IC05	INTEGRATED CIRCUIT	A52A2003GR2
L01	V-COIL	A431036
PC01	PHOTO COUPLER	A52LP620-G4
Q01, Q02, Q03	TRANSISTOR	B1GBCFGH0001
Q04, Q05, Q06	TRANSISTOR	A55C2412KTX
RY-PWR	ELECTRO MAGNETIC RELAY	K6B1AGA00077
SSR01	TYRISTOR	A56G3MC202PL
T01	TRANSFORMER	A401030
X01	RESONATOR	A45CSTS409MG
ZD1	DIODE	B0BC7R400003
ZNR01, ZNR03	DIODE	ERZVEAV511

(Note)

- All parts are supplied from MACC, Malaysia (Vendor Code: 086)

20. Electronic Circuit Diagram

Fig. 1

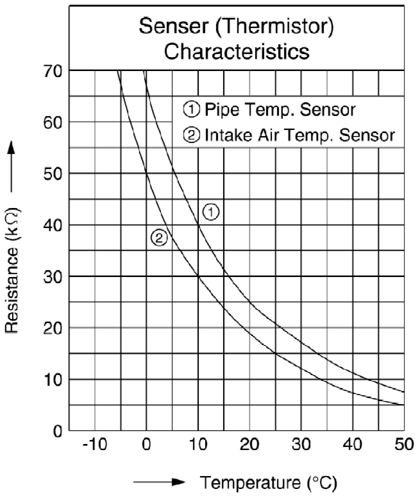


Fig. 2

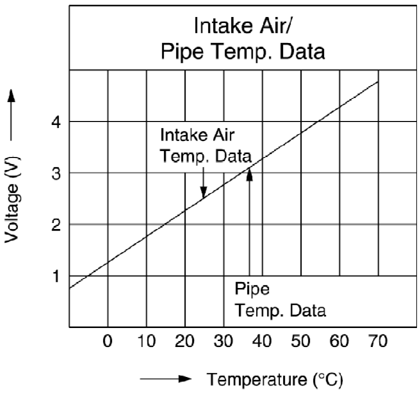
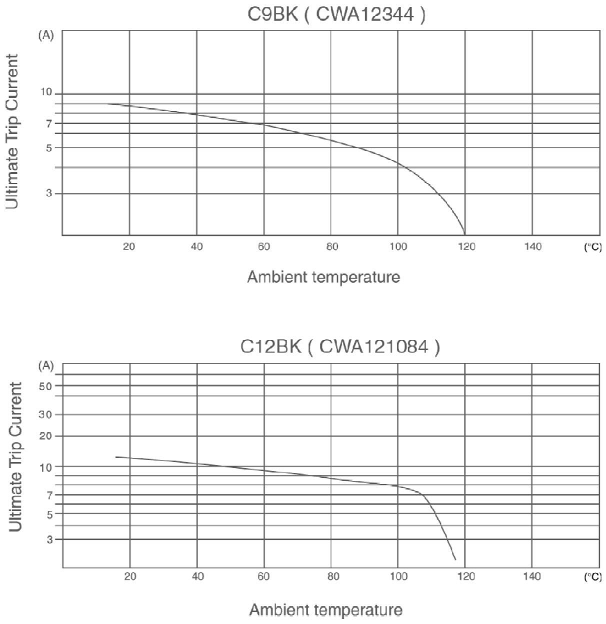


Fig. 3 OLP Characteristics (Compressor)



How to use electronic circuit diagram

Before using the circuit diagram, read the following carefully.

* Voltage measurement
Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer.
Use them for servicing.
Voltage indication is in Red at all operations.

	Intake air temperature	Temperature setting	Discharge air temperature	Pipe temperature
Cooling	27°C	16°C	17°C	15°C

* Indications for resistance
a. K....kΩ M....MΩ
W...watt Not indicated....1/4W
b. Type
Not indicated..........carbon resister
Tolerance±5%
..........metal oxide resister
Tolerance±1%

* Indications for capacitor
a. Unit μ....μF P....pF
b. Type Not indicated....ceramic capacitor
(S)...........S series aluminium electrolytic capacitor
(Z)...........Z series aluminium electrolytic capacitor
(SU)........SU series aluminium electrolytic capacitor
(P)...........P series polyester system
(SXE)......SXE series aluminium electrolytic capacitor
(SRA)......SRA series aluminium electrolytic capacitor
(KME)......KME series aluminium electrolytic capacitor

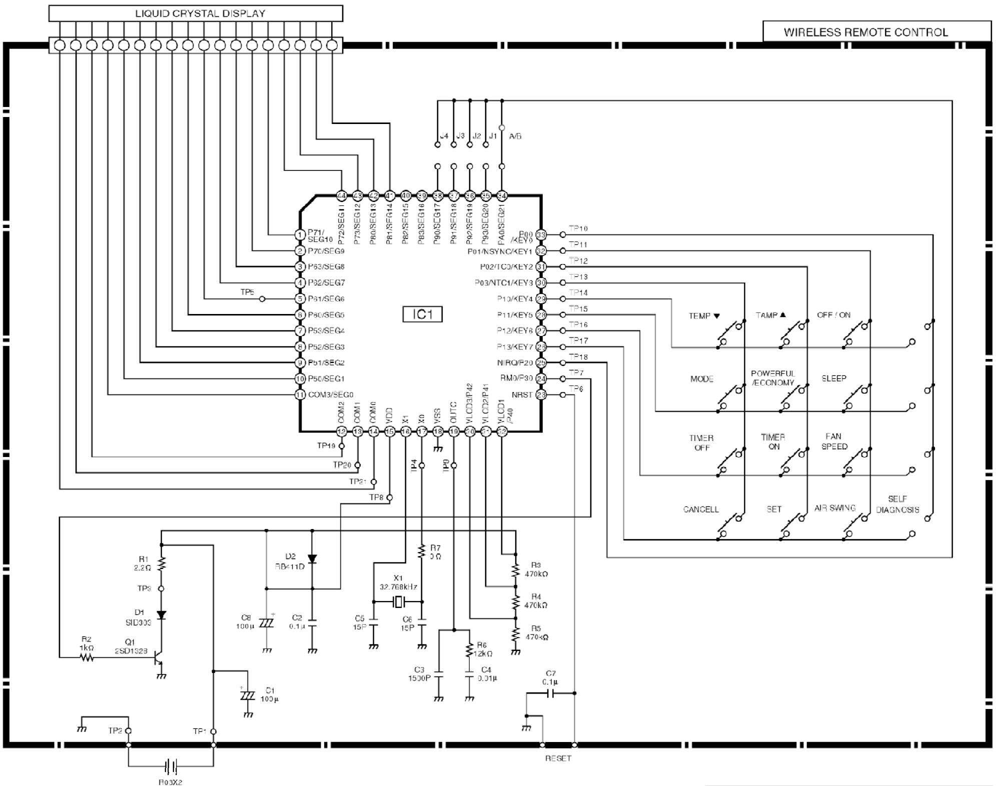
* Diode without indication.............MA165
※ Circuit Diagram is subject to change without notice for further development.

TIMER TABLE

Name		Time	Test Mode (When test point Short-circuited)	Remarks
Sleep Mode Waiting		**1 hr.**	**6 sec.**	
Sleep Mode Operation		**8 hrs.**	**48 sec.**	
Real Timer		**1 hr.**	**1 min.**	
		10 min.	**10 sec.**	
		1 min.	**1 sec.**	
Time Delay Safety Control		**2 min. 58 sec.**	**0 sec.**	
Forced Operation		**60 sec.**	**0 sec.**	
Time Save Control		**7 min.**	**4.2 sec.**	
Anti-Freezing		**4 min.**	**0 sec.**	
Auto Mode Judgement		**25 sec.**	**0 sec.**	
Soft Dry	**OFF**	**6 min.**	**36 sec.**	
	ON	**10 min.**	**60 sec.**	**Soft Dry: 10 min. operation**
Deodorizing Control	**Cooling**	**40 sec.**	**4 sec.**	
		70 sec.	**7 sec.**	
		20 sec.	**2 sec.**	
		180 sec.	**18 sec.**	
	Soft Dry	**40 sec.**	**4 sec.**	
		360 sec.	**36 sec.**	
Comp. Reverse Rotation Detection		**5 min.**	**30 sec.**	**Comp. ON 5 min. and above**
		2 min.	**0 sec.**	
Comp./ Fan Motor Delay Timer		**1.6 sec.**	**0 sec.**	
Powerful Mode Operation		**15 min.**	**15 sec.**	

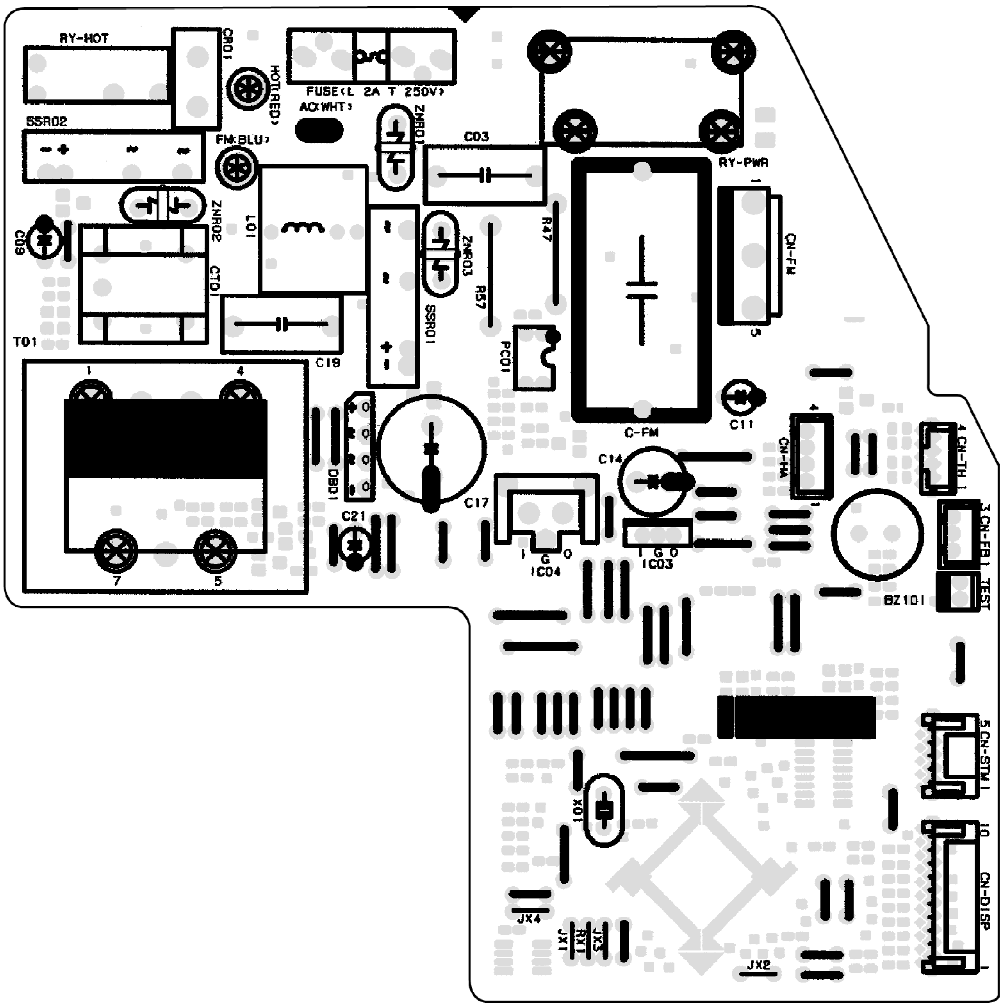
Random FM Timer (Economy Mode)	**5 sec.**	**5 sec.**	
Random Auto Restart Control	**0 ~ 62 sec.**	**0 ~ 6.2 sec.**	

20.1. REMOTE CONTROL / /

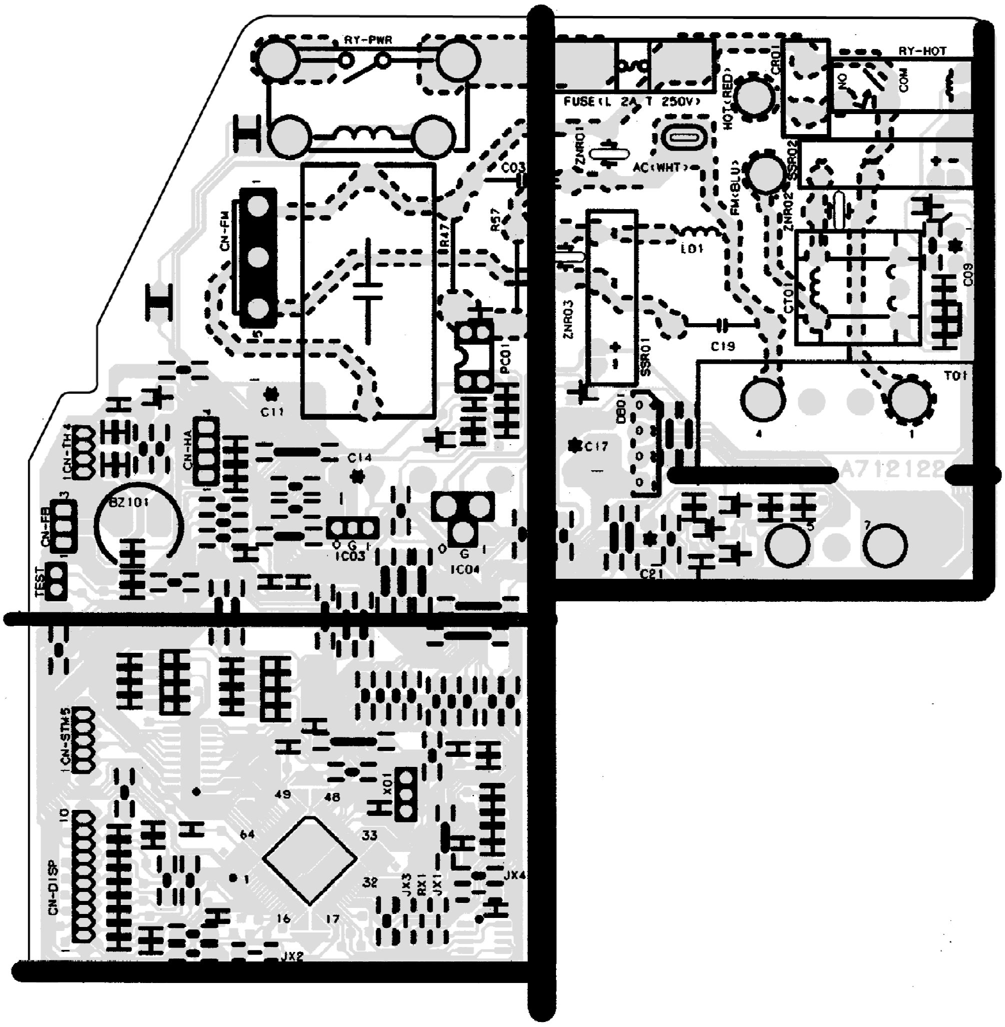

LIQUID CRYSTAL DISPLAY
WIRELESS REMOTE CONTROL
IC1
J4
J3
J2
J1
A/B
P71/ SEG10
P70/SEG9
P63/SEG8
P62/SEG7
P61/SEG6
P60/SEG5
P53/SEG4
P52/SEG3
P51/SEG2
P50/SEG1
COM3/SEG0
P72/SEG11
P73/SEG12
P80/SEG13
P81/SEG14
P82/SEG15
P83/SEG16
P90/SEG17
P91/SEG18
P92/SEG19
P93/SEG20
PA0/SEG21
P00 /KEY0
P01/NSYNC/KEY1
P02/TC0/KEY2
P03/NTC1/KEY3
P10/KEY4
P11/KEY5
P12/KEY6
P13/KEY7
NIRQ/P20
RM0/P30
NRST
COM2
COM1
COM0
VDD
X1
X0
VSS
OUTC
VLCD3/P42
VLCD2/P41
VLCD1 /P40
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TEMP ▼
TEMP ▲
OFF / ON
MODE
POWERFUL /ECONOMY
SLEEP
TIMER OFF
TIMER ON
FAN SPEED
CANCELL
SET
AIR SWING
SELF DIAGNOSIS
R1 2.2Ω
R2 1kΩ
Q1 2SD1323
D1 SID303
D2 RB411D
C8 100µ
C2 0.1µ
C5 15P
C6 15P
X1 32.768kHz
R7 0Ω
C3 1500P
C4 0.01µ
R6 12kΩ
R3 470kΩ
R4 470kΩ
R5 470kΩ
C7 0.1µ
C1 100µ
R03X2
RESET

	A - B	J1
0	SHORT	OPEN
1	OPEN	OPEN
2	SHORT	SHORT
3	OPEN	SHORT

20.2. PRINT PATTERN / INDOOR UNIT PRINTED CIRCUIT BOARD / / / TOP VIEW

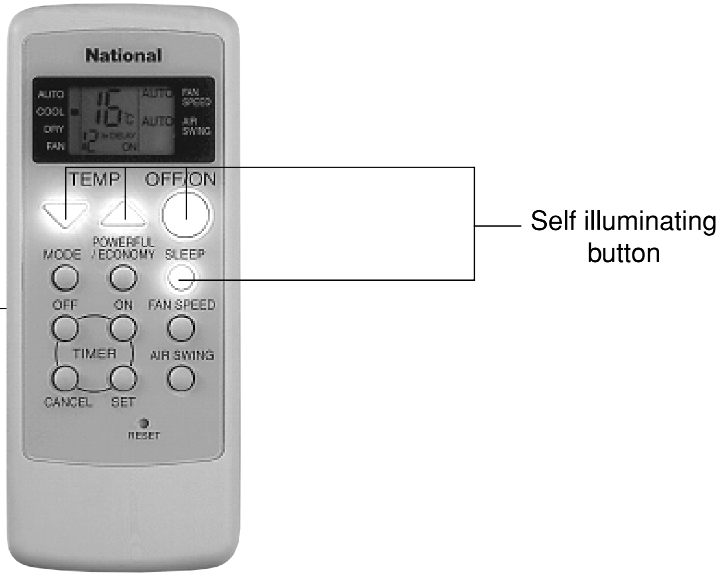

RY-HOT
CR01
HOT(RED)
FUSE(L 2A T 250V)
AC(WHT)
ZNR01
SSR02
FM(BLU)
C03
RY-PWR
ZNR02
L01
C09
CT01
ZNR03
R47
CN-FM
R57
SSR01
T01
C19
PC01
1
4
C-FM
C11
CN-HA
4 CN-TH 1
DB01
C14
C21
C17
I G O
IC04
I G O
IC03
BZ101
3 CN-FB 1
TEST
7
5
5 CN-STM 1
X01
10 CN-DISP 1
JX4
JX1
RX1
JX3
JX2

20.3. PRINT PATTERN / INDOOR UNIT PRINTED CIRCUIT BOARD / / / BOTTOM VIEW


RY-PWR
CN-FM
C03
R47
R57
C11
PC01
C14
CN-TH4
CN-HA
CN-FB
TEST
BZ101
IC03
IC04
CN-STM5
CN-DISP
X01
49
48
64
33
1
32
16
17
JX3
RX1
JX1
JX4
JX2
FUSE(L 2A T 250V)
ZNR01
AC(WHT)
HOT(RED)
FM(BLU)
CR01
RY-HOT
NO
COM
SSR02
ZNR02
LD1
CT01
C09
ZNR03
SSR01
C19
T01
DB01
C17
C21
A712122

[MACC] Printed in Malaysia /

Remote Control


National
AUTO
COOL
DRY
FAN
16°C
AUTO
FAN SPEED
AIR SWING
TEMP
OFF/ON
MODE
POWERFUL / ECONOMY
SLEEP
OFF
ON
FAN SPEED
TIMER
AIR SWING
CANCEL
SET
RESET
Self illuminating button

OFF / ON ⏻

Operation OFF / ON

MODE

Operation Mode Selection

• AUTO	Automatic Operation Mode
• COOL	Cooling Operation Mode
• DRY	Soft Dry Operation Mode
• FAN	Air Circulation Mode

FAN SPEED

Indoor Fan Speed Selection

• FAN ■	Low Fan Speed
• FAN ■■■	Medium Fan Speed
• FAN ■■■■■	High Fan Speed
• AUTO FAN	Automatic Fan Speed

AIR SWING

Vertical Airflow Direction Control

• AUTO	Automatic Vertical Airflow Direction Control
• MANUAL	Vertical Airflow Direction Manual Control (5 stages of adjustment)

POWERFUL / ECONOMY

Powerful / Economy Mode Operation OFF/ON

TEMP.

Room Temperature Setting

Cooling, Soft Dry, Air Circulation Operation.

- Temperature Setting (16°C to 30°C)

Automatic Operation

• Hi	Operation with 2°C higher than standard temperature.
•	Operation with standard temperature.
• Lo	Operation with 2°C lower than standard temperature.

TIMER

12-hour Timer Setting

• OFF	To set delay OFF Timer and hours setting
• ON	To set delay ON Timer and hours setting
• CANCEL	Cancellation
• SET	To start either delay Off or On

SLEEP

Sleep Mode Operation OFF / ON

Indoor Unit

Automatic Operation Button

- Press for < 5s to operate Automatic operation mode. (Used when the remote control cannot be used.)
- Press continuously for 5s or < 10s to operate Test Run/Pump down. "Beep" sound will be heard at the 5th second. (Used when test running or servicing.)
- Press continuously for 10s and above to omit or resume the remote control signal receiving sound. "Beep, beep" sound will be heard at the 10th second.

Operation Indication Lamps (LED)

- POWER (Green) .... Lights up in operation, blinks in Automatic Operation Mode judging.
- SLEEP (Orange) .... Lights up in Sleep Mode Operation.
- TIMER (Orange) .... Lights up in Timer Setting.
- POWERFUL (Orange) .. Lights up in Powerful Mode Operation.
- ECONOMY (Green) ..... Lights up in Economy Mode Operation.

Operation Mode

- Cooling, Soft Dry, Air Circulation and Automatic Mode.

Powerful Operation

- Reaches the desired room temperature quickly.

Economy Operation

- To reduce electrical power consumption.

Random Auto Restart Control

- Operation is restarted randomly after power failure at previous setting mode.

Anti-Freezing Control

- Anti-Freezing control for indoor heat exchanger. (Cooling and Soft Dry)

Sleep Mode Auto Control

- Indoor Fan operates at Low speed.
- Operation stops after 8 hours.

Indoor Fan Speed Control

- High, Medium and Low.
- Automatic Fan Speed Mode
  - Cooling : Fan rotates at Hi, Me and SLo speed. Deodorizing control is available.
  - Soft Dry: Fan rotates at SLo speed. Deodorizing control is available.

Airflow Direction Control

- Automatic air swing and manual adjusted by remote control for vertical airflow.
- Manually adjusted by hand for horizontal airflow.

Starting Current Control

- Fan motor is delayed for 1.6 seconds when compressor starts simultaneously.

Time Delay Safety Control

- Restarting is inhibited for appro. 3 minutes.

7 Minutes Time Save Control

- Cooling Operation only.

Anti-Dew Formation Control

- Anti-Dew Formation Control for indoor unit discharge area.

Outdoor Unit

Compressor Reverse Rotation Protection Control

- To protect compressor from reverse rotation when there is a instantaneous power failure.

Overload Protector

- 2-Stage OLP to protect the compressor. Overload Protector will trip when
  - Temperature of compressor increases to 120°C.
  - High temperature or high current flows to compressor. (Refer circuit diagram for OLP characteristic)

60 Secs. Forced Operation Control

- Once the compressor is activated, it does not stop within the first 60 secs. However, it stops immediately with remote control stop signal.

Outdoor Fan Operation Control

- Temperature Fuse.

SAFETY PRECAUTIONS

Before operating, please read the following "Safety Precautions" carefully.

- To prevent personal injury, injury to others and property damage, the following instructions must be followed.
- Incorrect operation due to failure to follow instructions will cause harm or damage, the seriousness of which is classified as follow:

⚠ Warning

This sign warns of death or serious injury.

⚠ Caution

This sign warns of damage to property.

- The instructions to be followed are classified by the following symbols:

🚫

This symbol (with a white background) denotes an action that is PROHIBITED.

❗

These symbols (with a black background) denote actions that are COMPULSORY.

Installation Precautions

⚠ Warning

- **Do not install, remove and reinstall the unit by yourself.** Improper installation will cause leakage, electric shock or fire. Please engage an authorized dealer or specialist for the installation work.

⚠ Caution

❗
- **This room air conditioner must be earthed.** Improper grounding could cause electric shock.
- **Ensure that the drainage piping is connected properly.** Otherwise, water will leak out.

🚫
- **Do not install the unit in a potentially explosive atmosphere.** Gas leak near the unit could cause fire.

Operation Precautions

⚠ Warning

This sign warns of death or serious injury.

🚫
- Do not share outlet.
- Do not insert plug to operate the unit. Do not pull out plug to stop the unit.
- Do not operate with wet hands.
- Do not damage or modify the power cord.
- Do not insert finger or other objects into the indoor or outdoor units.
- Do not expose directly to cold air for a long period.

❗
- Plug in properly.
- Use specified power cord.

- If abnormal condition (burnt smell, etc.) occurs, switch off and unplug the power supply.

⚠ Caution

This sign warns of injury.

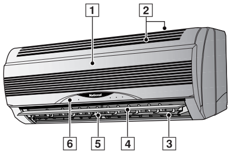
🚫
- Do not pull the cord to disconnect the plug.
- Do not wash the unit with water.
- Do not use for other purposes such as preservation.
- Do not use any combustible equipment at airflow direction.
- Do not sit or place anything on the outdoor unit.

❗
- Switch off the power supply before cleaning.
- Ventilate the room regularly.
- Pay attention as to whether the installation rack is damaged after long period of usage.

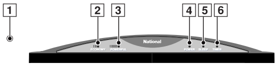
- Switch off the power supply if the unit is not used for a long period.

NAME OF EACH PART

Indoor Unit

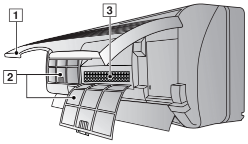


1 Front Panel
2 Air Intake Vent
3 Air Outlet Vent
4 Vertical Airflow Direction Louver
5 Horizontal Airflow Direction Louver (manually adjusted)
6 Indicator Panel



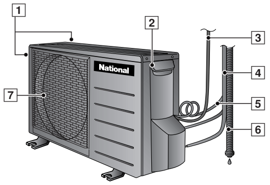
1 Auto Operation Button (when the front panel is opened)		
2 Economy Mode Indicator	–	GREEN
3 Powerful Mode Indicator	–	ORANGE
4 Power Indicator	–	GREEN
5 Sleep Mode Indicator	–	ORANGE
6 Timer Mode Indicator	–	ORANGE

- **Indoor Unit** (when the front panel is opened)



1 Front Panel
2 Air Filters
3 Air Purifying Filter

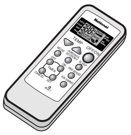
Outdoor Unit



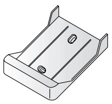
1 Air Intake Vents
2 Ground Terminal (Inside cover)
3 Power Supply Cord
4 Piping
5 Connecting Cable
6 Drain Hose
7 Air Outlet Vents

Accessories

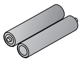
- **Remote Control**



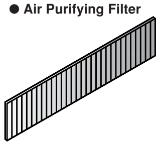
- **Remote Control Holder**



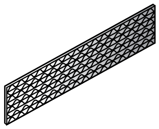
- **Two RO3 (AAA) dry-cell batteries or equivalent**



- **Air Purifying Filter**



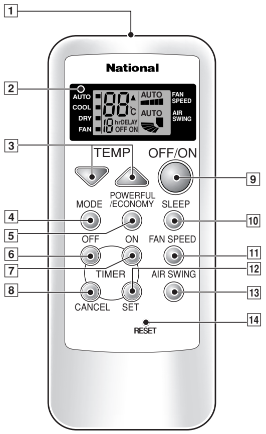
(Catechin Air Purifying Filter)



(Solar Refreshing Deodorizing Filter)

NAME OF EACH PART

■ Remote Control


1
2
National
AUTO
COOL
DRY
FAN
AUTO
FAN SPEED
AUTO
AIR SWING
hr DELAY OFF ON
3
TEMP
OFF/ON
9
POWERFUL /ECONOMY
MODE
SLEEP
4
5
10
OFF
ON
FAN SPEED
6
11
7
TIMER
AIR SWING
12
8
CANCEL
SET
13
14
RESET

- **Remote Control Signal.**
  - Make sure it is not obstructed.
  - Maximum distance : 10 m.
  - Signal received sound. One short beep or one long beep.
- **Notes for Remote Control.**
  - Do not throw or drop.
  - Do not get it wet.
  - Certain type of fluorescent lamps may affect signal reception. Consult your dealer.

1 Signal Transmitter

2 Operation Display

3 Room Temperature Setting Button (self-illuminating button)

4 Operation Mode Selection Button

5 Powerful/Economy Mode Operation Button

6 Delay OFF-Timer Button

7 Delay ON-Timer Button

8 Timer Cancellation Button

9 OFF/ON Button (self-illuminating button)

10 Sleep Mode Operation Button (self-illuminating button)

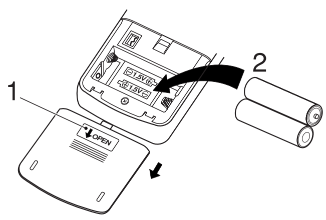
11 Fan Speed Selection Button

12 Timer Set Button

13 Airflow Direction Selection Button

14 Reset Point (Press with fine-tipped object to clear the memory)

- **How to Insert the Batteries**


1
2
OPEN
1.5V
1.5V

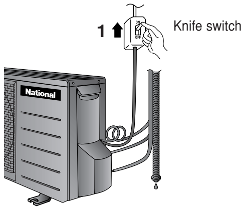
1 **Gently press the place marked OPEN and slide the cover towards you.**

2 **Insert the batteries**
– Be sure the direction is correct

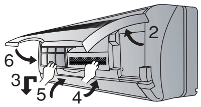
- **About the batteries**
  - Can be used for approximately one year.
- **Observe the following when replacing the batteries**
  - Replace with new batteries of the same type.
  - Do not use rechargeable batteries (Ni-Cd).
  - Remove the batteries if the unit is not going to be used for a long period.

PREPARATION BEFORE OPERATION

■ Indoor Unit


1
Knife switch
National

1 Set the knife switch to "ON"



2 Open the front panel

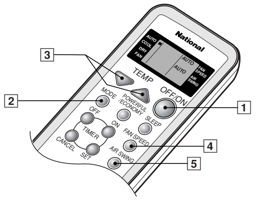
3 Remove the air filters

4 Fit the air purifying filters in place

5 Insert the air filters

6 Close the front panel

HOW TO OPERATE


3
2
1
4
5
National
TEMP
OFF/ON
MODE
POWERFUL /ECONOMY
SLEEP
OFF
ON
FAN SPEED
TIMER
CANCEL
SET
AIR SWING

■ To start the operation

- Press 1.
- POWER indicator (green) on the indoor unit will light up.
- To stop, press once more.

■ Setting Mode

- Press 2 to select:-

AUTO – Automatic Operation
COOL – Cooling Operation
DRY – Soft Dry Operation
FAN – Air Circulation Operation

■ Setting Temperature

- Press 3 to increase or decrease the temperature.
- The temperature can be set between 16°C ~ 30°C.
- Recommended temperature:

COOL	26°C ~ 28°C
DRY	1°C ~ 2°C lower than the room temperature

- During **AUTO** Operation, press 3 to select:-

Hi	• Operation with 2°C higher than the standard temperature.
	• Operation with the standard temperature.
Lo	• Operation with 2°C lower than the standard temperature.

- **Standard Temperature**

Indoor temperature	Operation	Standard temperature
23°C	Cooling	25°C
	Soft Dry	22°C

- Once the Automatic Operation is selected, the indoor temperature sensor operates automatically to select the desired operation mode with Cooling or Soft Dry.
- After the operation mode has been selected, the mode does not change.

■ Setting the Fan Speed

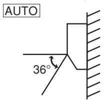
- Press 4 to select:-

■ – Low Fan Speed
■■■ – Medium Fan Speed
■■■■■ – High Fan Speed
AUTO – Automatic Fan Speed
The speed of the indoor fan is adjusted automatically according to the operation. The indoor fan stops occasionally during cooling operation.

■ Setting the Vertical Airflow Direction

- Press 5 to select:-

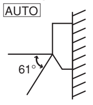
COOL/ DRY Operation



Swing up/down Automatically

or
Five stages of adjustment between 14° ~ 36°.

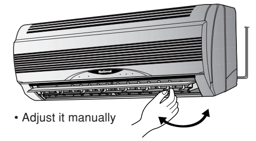
FAN Operation



Swing up/down Automatically

or
Five stages of adjustment between 0° ~ 61°.

■ Setting the Horizontal Airflow Direction



● Use this air conditioner under the following conditions:

Unit in °C

DBT: Dry Bulb Temp WBT: Wet Bulb Temp	Indoor		Outdoor	
	DBT	WBT	DBT	WBT
Maximum Temperature	32	23	43	26
Minimum Temperature	16	11	16	11

● Notes

- If the unit is not going to be used for an extended period of time, turn off the main power supply. If it is left at the ON position, approximately 2.5 W of electricity will be used even if the indoor unit has been turned off with the remote control.
- If operation is stopped, then restart immediately, the unit will resume operation only after 3 minutes.

● Operation Details

COOL – Cooling Operation

- To set the room temperature at your preference cooling comfort.

AUTO – Automatic Operation

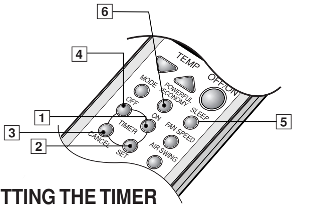
- Sense indoor temperature to select the optimum mode.
- Temperature is not displayed on the remote control during AUTO operation.

DRY – Soft Dry Operation

- A very gentle Cooling Operation, prior to dehumidification. It does not lower the room temperature.
- During Soft Dry operation, the indoor fan operates at Low fan speed.

FAN – Air Circulation Operation

- When the room temperature reaches the set temperature, operation commences at Low airflow volume. It stops when the room temperature drops to 2°C below the set temperature.
(It is useful when using a heater).



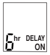
SETTING THE TIMER

The Delay ON-Timer and Delay OFF-Timer cannot be selected simultaneously.

■ Delay ON-Timer Operation

To start the air conditioner operation automatically.
(This operation can be set during the air conditioner is not in operation)

- Press 1 to set the operation and press continuously until your desired time.



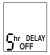
Example: The air conditioner will start operation approximately 6 hours later (Refer operation details)

- Then press 2
- To cancel this operation, press 3

■ Delay OFF-Timer Operation

To stop the air conditioner operation automatically.
(This operation can be set during the air conditioner is in operation)

- Press 4 to set the operation and press continuously until your desired time.



Example : The air conditioner will stop the operation 5 hours later.

- Then press 2
- To cancel this operation, press 3

■ Delay Timer Operation Details.

When the Delay ON-Timer is set, operation will start before the actual set time. This is to enable the room temperature reaches the set temperature at the set time.

COOL,DRY, AUTO	15 minutes in advance

- Delay ON-Timer or Delay OFF-Timer can be set from a minimum of 1 hour to a maximum of 12 hours only.
- The timer figure will change according to the time remaining.
(If you set it to turn off 3 hours from now, the timer will show "2" an hour later)

CONVENIENCE OPERATION

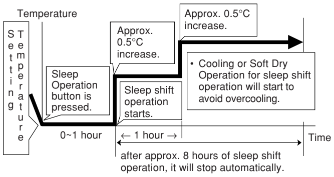
■ Sleep Mode Operation

To obtain a comfortable room temperature while sleeping:-

- Press 5.
- Sleep mode indicator on the indoor unit will light up.
- To cancel this operation, press once more.

● Sleep Mode Operation Details

- When the room temperature reaches the set temperature, the airflow volume will change to low automatically.
- Sleep Mode Operation time is 8 hours.
- When used together with the timer, the timer has a priority.



■ Powerful / Economy Mode Operation

- Press 6 to select.
- The operation changes in this order:

↓
Powerful (Powerful indicator at indoor unit will light up)
↓
Economy (Economy indicator at indoor unit will light up)
↓
Normal

● Powerful / Economy Mode Operation Details

- Powerful Mode Operation.
  - To obtain the set temperature quickly.
  - Powerful Mode will operate for 15 minutes only.
- Economy Mode Operation.
  - To save electrical power consumption.
  - Please use this mode when the room has reached your desired temperature.
- The changes of the temperature and airflow volume are automatic.
- The remote control display remains unchanged.
- If sleep button or operation mode button is pressed, economy or powerful operation will be cancelled.
- During **FAN** – Air circulation operation, the powerful and economy operation are not available.

	Temperature	Airflow volume
Economy Mode Operation	0.5°C higher than set temp	Super Low
Powerful Mode Operation	3°C lower than set temp	Super High

CARE AND MAINTENANCE

■ Cleaning the Indoor Unit and Remote Control

- Wipe gently with a soft, dry cloth.
- Do not use water hotter than 40˚C or polishing fluid to clean the unit.

■ Cleaning the Air Filter

(Recommendation:- If the unit is operated in a dusty environment, clean the filters every two weeks, continuous use of this dirty filters will reduce cooling efficiency)

1 Remove dirt using a vacuum cleaner.

2 Wash back of the air filter with water.

3 If badly soiled, wash it with soap or a mild household detergent.

4 Let it dry and reinstall it.
Be sure the "FRONT" mark is facing you.
※ Damaged air filter.
Consult the nearest authorized dealer.
Part No.: CWD001047.
- Do not use benzene, thinner, scouring powder or clothes soaked in caustic chemical to clean the unit.

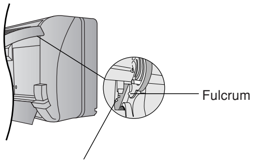
■ Cleaning the Front Panel

(Must be removed before washing)

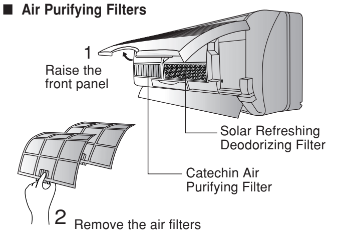
1 Raise the front panel higher than the horizontal and pull to remove it.

2 Gently wash with water and a sponge.
- Do not press the front panel too hard when washing.
- When use kitchen cleaning fluid (neutral detergent), rinse throughly.
- Do not dry the front panel under direct sunlight.

3 To fix the front panel, raise the front panel horizontally, match the protruding portion on the indoor unit to the fulcrum and push into place.



■ Air Purifying Filters


1
Raise the front panel
Solar Refreshing Deodorizing Filter
Catechin Air Purifying Filter
2 Remove the air filters

● Solar Refreshing Deodorizing Filter.
- Used to remove unpleasant odour and deodorize the air in the room.
- Reusable.
- Vacuum, place under direct sunlight for 6 hours and fit it back in place.
(Recommended : every 6 months)

● Catechin Air Purifying Filter
- The filter is coated with catechin to prevent growth of bacteria and viruses.
- Reusable.
- Vacuum and fit it back in place
(Recommended : every 6 months)

- Recommended to change these filters every 3 years.
Do not reuse damaged filters.
Consult the nearest authorized dealer to purchase a new filter.
Catechin Air Purifying Filter No.: CZ-SF70P
Solar Refreshing Deodorizing Filter No.: CZ-SFD70P

- If you operate the air conditioner with dirty filters:-
– Air is not purified
– Cooling capacity decreases
– Foul odour is emitted

■ Pre-season Inspection

● Is the discharged air cold?
Operation is normal if 15 minutes after the start of operation, the difference between the air intake and outlet vents temperature is:-

COOL – 8°C or above

● Are the air intake or outlet vents of the indoor or outdoor units obstructed?

● Are the remote control batteries weak?
If the remote control display appears weak, replace the batteries.

■ When the Air Conditioner is Not Used for an Extended Period of Time

1 To dry the internal parts of the indoor unit, operate the unit for 2 - 3 hours using:-

FAN operation

2 Stop the operation by remote control and switch off the knife switch.
Note: If the unit is not switched off by the remote control, it will start operating when the knife switch is switched to ON (because the unit is equipped with Auto Restart Control).

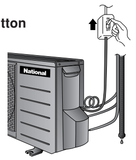
3 Remove the remote control batteries.

■ Recommended Inspection

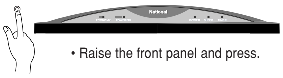
- After used over several seasons, the unit will become dirty and thus decreases the unit's performance. Depending on the operation conditions, a dirty unit may produce odour and dust may pollute dehumidification system. Therefore, a seasonal inspection is recommended in addition to regular cleaning. (Consult an authorized dealer).

HELPFUL INFORMATION

■ Auto Operation Button



• Confirm the knife switch at "ON"



• Raise the front panel and press.

● Automatic Operation
- If the remote control fails to function or has been misplaced, press the Auto Operation button to start the Automatic operation.
- The Automatic operation will be activated immediately once the Auto operation button is pressed. However, temperature cannot be adjusted in this operation.
- The power indicator on the indoor unit will blink until the operation mode is selected automatically.
- To cancel this operation, press once more.

● Remote Control Signal Receiving Sound
- To switch off the beep (Signal Receiving Sound), press the Auto Operation button for 10 seconds continuously or longer.
"Beep", "beep" sound will be heard at the tenth seconds.
Note: "Beep" sound will be heard at the fifth seconds;
However please press continuously until you heard "beep", "beep" sound.
- Repeat the above steps if you want to switch on the Signal Receiving Sound.

● (This is for Servicing purposes only.)
Note: If you press this button continuously for 5 to 10 seconds, Test Run operation will be performed. A "beep" sound will be heard at the fifth seconds indicating the Test Run starts to operate.

■ Auto Restart Control
- If power is resumed after a power failure, the operation will restart automatically after 3 - 5 1/2 minutes.
- Operation will be restarted automatically under the previous operation mode and airflow direction when power is resumed as the operation is not stopped by the remote control.

■ Timer Setting
- When power failure occurs, the timer setting will be cancelled. Once power is resumed, reset the timer.

■ Thunder and Lightning
- This air conditioner is equipped with a built-in surge protective device. However, in order to further protect your air conditioner from being damaged by abnormally strong lightning activity, you may switch off the knife switch.

ENERGY SAVING AND OPERATION HINTS

■ Setting the Temperature
- Approximately 10% of electricity can be saved.
- Set the temperature 1°C higher than the desired temperature.

■ Air Filters and Air Purifying Filters
- Clean the air filters every 2 weeks and the Air Purifying Filters every 6 months.
- Dirty filters may reduces cooling efficiency.

■ Keep All Doors and Windows Closed
- Otherwise, cooling performance will be reduced and electricity cost is wasted.

■ Outdoor Unit
- Do not block the air outlet vents. Otherwise, it will lower the cooling performance.

■ Timer and Sleep Mode
- To prevent wastage of electricity, use sleep mode when sleeping or Timer when going out.

■ Avoid Direct Sunlight
- Keep curtains or drapes closed to avoid direct sunlight during cooling operation.

TROUBLESHOOTING

■ Normal Operation

Is it okay?		This is the answer
• Air conditioner has been restarted, but does not operate for 3 minutes.	➡	• This is to protect the air conditioner. Wait until the air conditioner begins to operate.
• A sound like water flowing can be heard.	➡	• This is the sound of refrigerant flowing inside the air conditioner.
• It seems that fog is coming out from the air conditioner.	➡	• Condensation occurs when the airflow from the air conditioner cools the room.
• The room has a peculiar odour.	➡	• This may be a damp smell emitted by the wall, carpet, furniture or clothing in the room.
• During Automatic Airflow Volume setting, indoor fan stops occasionally.	➡	• This is to remove smell emitted by the surroundings.
• The outdoor unit emits water or steam.	➡	• In COOL/DRY operation, moisture in the air condenses into water on the cool surface of outdoor unit piping that causes dripping.

■ Abnormal Operation

Is it okay?		Please check
• **The air conditioner does not operate.**	➡	• Has the circuit breaker been tripped? • Is the timer being used correctly?
• **Air conditioner produces loud noise during operation.**	➡	• Is the installation work slanted? • Is the front grille closed properly?
• **The air conditioner does not cool effectively.**	➡	• Has the temperature been set incorrectly? • Are the filters dirty? • Are the intake or outlet vents of the outdoor unit obstructed? • Are all windows and doors closed?

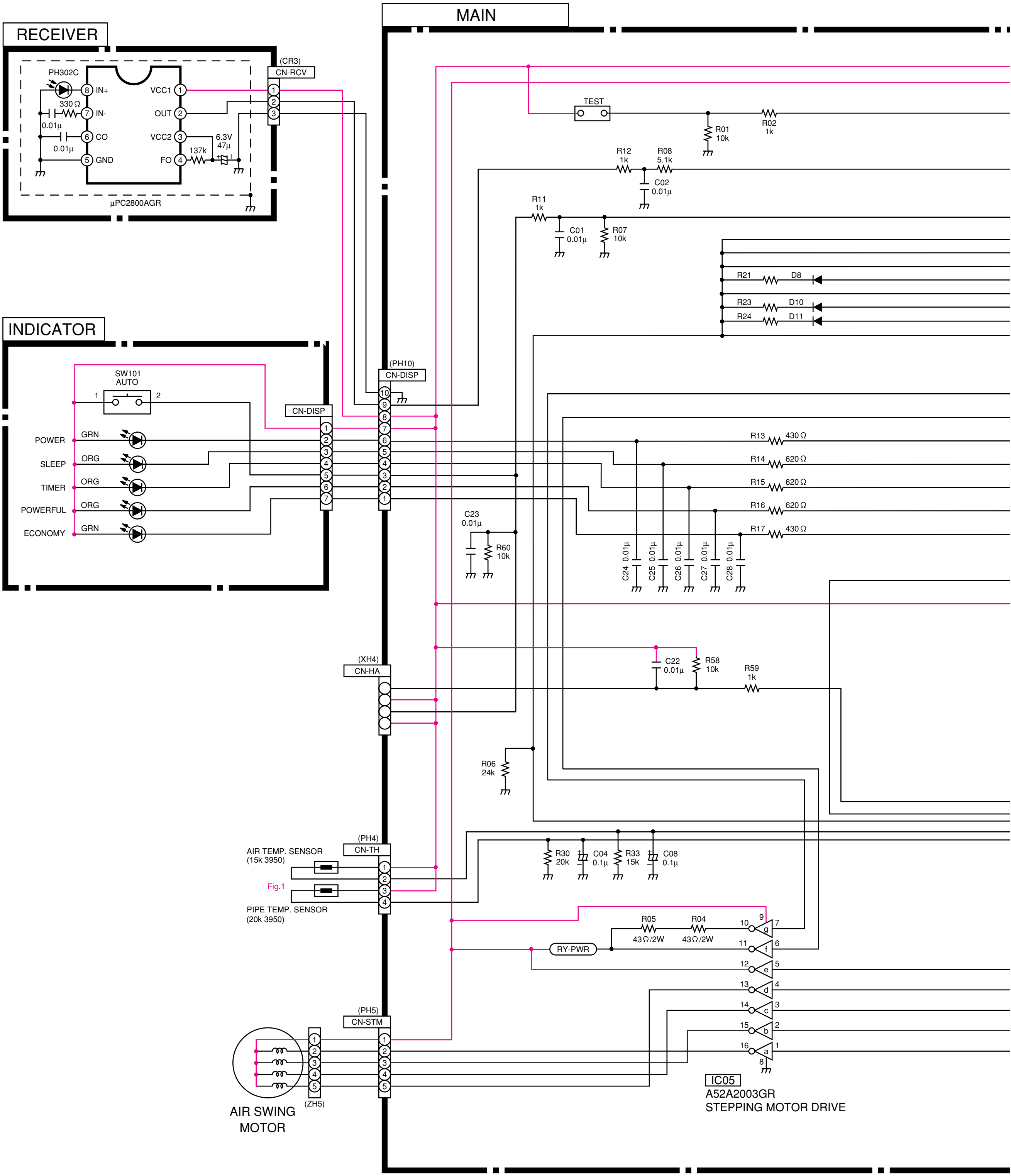
■ Call the Dealer Immediately

If the following conditions occur, turn off the main power supply, and then call the dealer immediately.

- **Abnormal noise is heard during operation.**
- **Water or foreign material gets into the remote control by mistake.**
- **Water leak from the indoor unit.**
- **Switches or buttons do not operate properly.**
- **The circuit breaker switches off frequently.**
- **Power supply cord become unusually warm.**

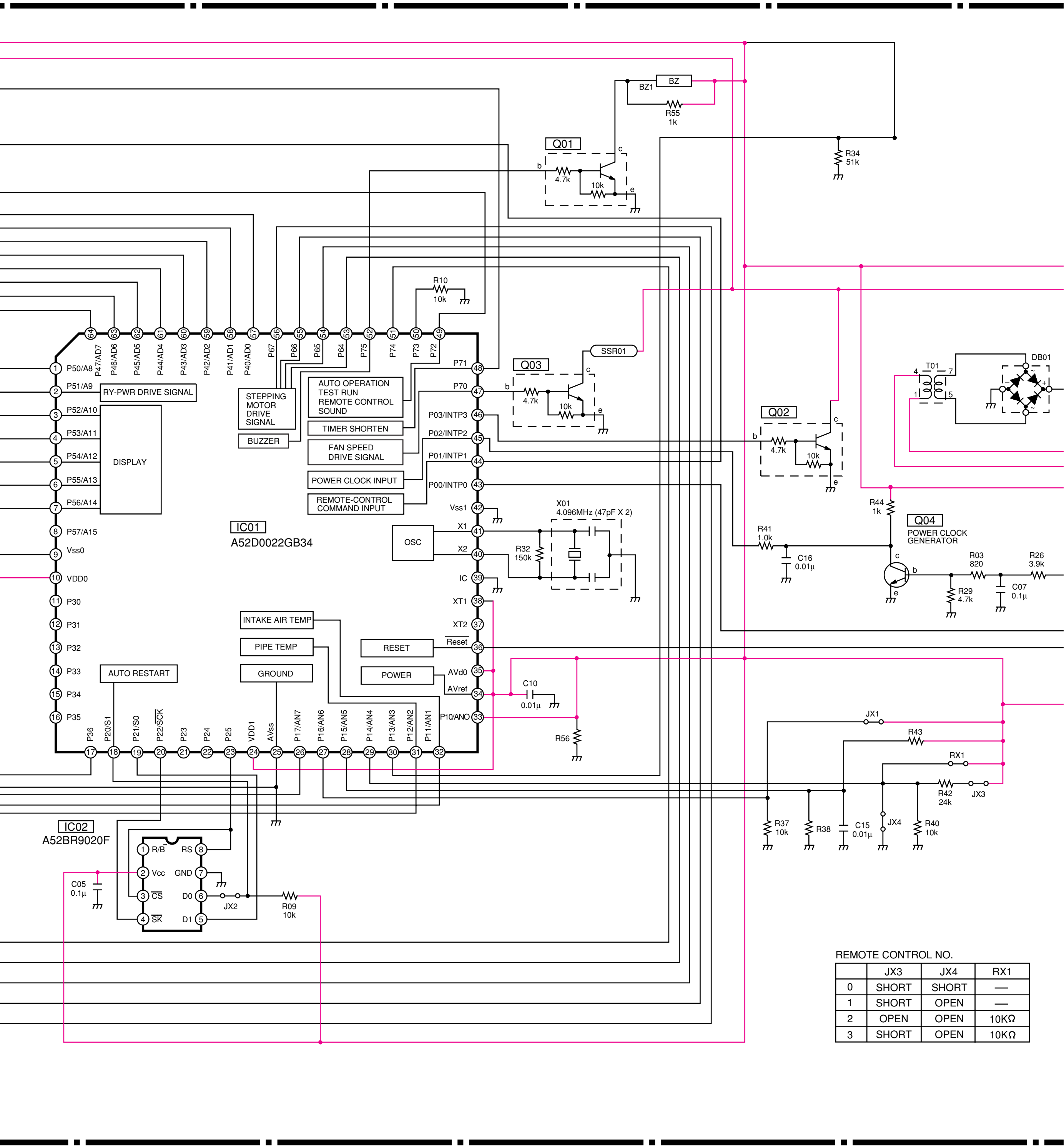
• CS-C9BKNG / CU-C9BKN5G
• CS-C12BKNG / CU-C12BKN5G

SCHEMATIC DIAGRAM 1/3



RECEIVER
PH302C
330Ω
0.01µ
0.01µ
IN+
IN-
CO
GND
VCC1
OUT
VCC2
FO
137k
6.3V
47µ
µPC2800AGR
(CR3)
CN-RCV
MAIN
TEST
R01 10k
R02 1k
R12 1k
R08 5.1k
C02 0.01µ
R11 1k
C01 0.01µ
R07 10k
R21
D8
R23
D10
R24
D11
INDICATOR
SW101 AUTO
1
2
POWER
GRN
SLEEP
ORG
TIMER
ORG
POWERFUL
ORG
ECONOMY
GRN
CN-DISP
(PH10)
CN-DISP
R13 430Ω
R14 620Ω
R15 620Ω
R16 620Ω
R17 430Ω
C23 0.01µ
R60 10k
C24 0.01µ
C25 0.01µ
C26 0.01µ
C27 0.01µ
C28 0.01µ
(XH4)
CN-HA
C22 0.01µ
R58 10k
R59 1k
R06 24k
(PH4)
CN-TH
AIR TEMP. SENSOR
(15k 3950)
Fig.1
PIPE TEMP. SENSOR
(20k 3950)
R30 20k
C04 0.1µ
R33 15k
C08 0.1µ
R05 43Ω/2W
R04 43Ω/2W
RY-PWR
(PH5)
CN-STM
AIR SWING MOTOR
(ZH5)
IC05
A52A2003GR
STEPPING MOTOR DRIVE

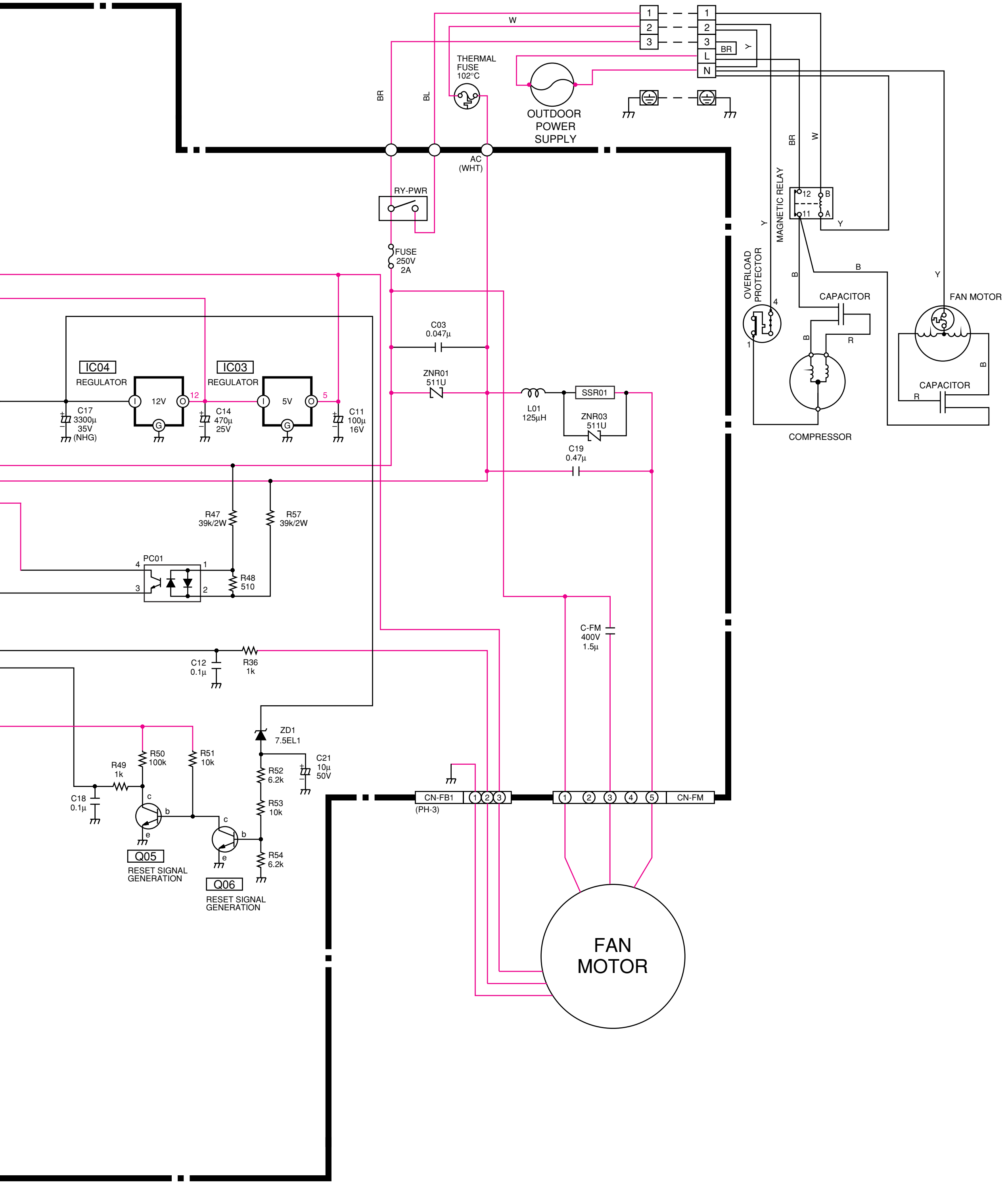
SCHEMATIC DIAGRAM 2/3


BZ
BZ1
R55
1k
Q01
b
4.7k
10k
c
e
R34
51k
R10
10k
64
63
62
61
60
59
58
57
56
55
54
53
52
51
50
49
P47/AD7
P46/AD6
P45/AD5
P44/AD4
P43/AD3
P42/AD2
P41/AD1
P40/AD0
P67
P66
P65
P64
P75
P74
P73
P72
1 P50/A8
2 P51/A9
3 P52/A10
4 P53/A11
5 P54/A12
6 P55/A13
7 P56/A14
8 P57/A15
9 Vss0
10 VDD0
11 P30
12 P31
13 P32
14 P33
15 P34
16 P35
RY-PWR DRIVE SIGNAL
DISPLAY
STEPPING MOTOR DRIVE SIGNAL
BUZZER
AUTO OPERATION TEST RUN REMOTE CONTROL SOUND
TIMER SHORTEN
FAN SPEED DRIVE SIGNAL
POWER CLOCK INPUT
REMOTE-CONTROL COMMAND INPUT
P71 48
P70 47
P03/INTP3 46
P02/INTP2 45
P01/INTP1 44
P00/INTP0 43
Vss1 42
X1 41
X2 40
IC 39
XT1 38
XT2 37
Reset 36
AVd0 35
AVref 34
P10/ANO 33
OSC
IC01
A52D0022GB34
SSR01
Q03
b
4.7k
10k
c
e
Q02
b
4.7k
10k
c
e
X01
4.096MHz (47pF X 2)
R32
150k
INTAKE AIR TEMP
PIPE TEMP
GROUND
AUTO RESTART
RESET
POWER
C10
0.01μ
R56
P36
P20/S1
P21/S0
P22/SCK
P23
P24
P25
VDD1
AVss
P17/AN7
P16/AN6
P15/AN5
P14/AN4
P13/AN3
P12/AN2
P11/AN1
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
IC02
A52BR9020F
1 R/B
2 Vcc
3 CS
4 SK
RS 8
GND 7
D0 6
D1 5
C05
0.1μ
JX2
R09
10k
T01
4
7
1
5
DB01
R44
1k
Q04
POWER CLOCK GENERATOR
R41
1.0k
C16
0.01μ
c
b
e
R03
820
R26
3.9k
R29
4.7k
C07
0.1μ
JX1
R43
RX1
R42
24k
JX3
R37
10k
R38
C15
0.01μ
JX4
R40
10k

REMOTE CONTROL NO.

	JX3	JX4	RX1
0	SHORT	SHORT	—
1	SHORT	OPEN	—
2	OPEN	OPEN	10KΩ
3	SHORT	OPEN	10KΩ

SCHEMATIC DIAGRAM 3/3


W
1
2
3
1
2
3
L
N
BR
Y
THERMAL
FUSE
102°C
BR
BL
OUTDOOR
POWER
SUPPLY
AC
(WHT)
RY-PWR
FUSE
250V
2A
BR
W
Y
MAGNETIC RELAY
12
B
11
A
Y
OVERLOAD
PROTECTOR
4
1
B
B
Y
CAPACITOR
FAN MOTOR
B
R
B
CAPACITOR
R
COMPRESSOR
C03
0.047µ
ZNR01
511U
L01
125µH
SSR01
ZNR03
511U
C19
0.47µ
IC04
REGULATOR
12V
I
O
G
12
C17
3300µ
35V
(NHG)
IC03
REGULATOR
5V
I
O
G
5
C14
470µ
25V
C11
100µ
16V
R47
39k/2W
R57
39k/2W
PC01
4
3
1
2
R48
510
C-FM
400V
1.5µ
C12
0.1µ
R36
1k
ZD1
7.5EL1
C21
10µ
50V
R52
6.2k
R53
10k
R54
6.2k
R50
100k
R51
10k
R49
1k
C18
0.1µ
c
b
e
Q05
RESET SIGNAL
GENERATION
c
b
e
Q06
RESET SIGNAL
GENERATION
CN-FB1
1
2
3
(PH-3)
1
2
3
4
5
CN-FM
FAN
MOTOR